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Are Health Care Professionals Addressing the Psychological Aspect of Athletic Injury? A Survey of Injured Athletes

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ARE HEALTH CARE PROFESSIONALS ADDRESSING THE PSYCHOLOGICAL ASPECT OF ATHLETIC INJURY? A SURVEY OF INJURED ATHLETES

by

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THESIS

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Abstract

Millions of athletic injuries occur annually. Athletic injures involve not only physical distress but psychological distress as well. Nevertheless, injured athletes rarely see a mental health care professional. It has been suggested that health care professionals, such as physicians, physiotherapists, and athletic therapists, are well positioned to address the psychological aspect of injury. Health care professionals report that they sometimes address the psychological aspect of injury with the athletes they treat. There is limited research, however, on what injured athletes perceive to be the role of health care professionals in addressing the psychological aspect of injuries. Therefore the purpose of the present study was to examine what role athletes perceive health care professionals to play in the psychological rehabilitation of injured athletes. Twenty-three athletes who had suffered a serious athletic injury took part in the present study by completing and online questionnaire. Results indicate that participants thought it was important to have the psychological aspect of injury addressed by health care professionals. Injured athletes indicated that health care professionals most often addressed fear of re-injury and avoidance of sports-specific rehabilitation activities. Conversely, concerns about weight changes and dependence on painkillers were discussed less often. With regard to the psychological aspect of injury, injured athletes found it most helpful to have health care professionals educate them on all aspects of their injury and rehabilitation. Moreover, they appreciated a rehabilitation atmosphere that was supportive and positive; one in which they felt important. Injured athletes valued the feeling that there was open two-way communication between themselves and the health care professional. Additionally, participants thought that physiotherapists and athletic therapists addressed the

psychological aspect of injury more often and more effectively than other health care professionals. Results of this study indicate that injured athletes recognize the psychological component to athletic injury and appreciate that it should be addressed. This is generally consistent with previous research which has focused on the perspective of health care professionals. It also brings up many questions for further research including replication of the present study with a larger sample size, and a modified questionnaire, as well as further examination of the roles of health care professionals and mental health care professionals in addressing the psychological aspect of injury.

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It is estimated that as many as 7 million athletic injuries occur annually in the United States (Conn, Annest, & Gilchrist, 2003). The prevalence of athletic injuries has prompted researchers, over the past two decades, to gain a more complete understanding of the experiences of injured athletes. In doing this, researchers have come to focus not only on the physical aspect of injury but also on the psychological aspect of injury (Johnston & Carroll, 1998, Tracey, 2003; Wiese-Bjornstal, Smith, Shaffer, & Morrey, 1998). The psychological aspect of injury encompasses the emotional response to injury (e.g., fear, frustration, anger) and how this response affects the rehabilitation process (e.g., motivation, adherence, belief in recovery), as well as the physical and psychosocial outcomes (e.g., return-to-play outcome, functional ability, perceived success/abilities). It has been widely reported that almost all injured athletes experience some sort of psychological distress during the injury and rehabilitation process (Jevon & Johnston, 2003; Tracey, 2003; Walker, Thatcher, & Lavelle, 2007).

Various models have been used to try to understand the experience of the injured athlete; more specifically, the psychological impact of injuries on the athlete. These models have ranged from stage-type models based in psychology research, such as the Grief Model (Gordon, 1986; Kubler-Ross, 1969; Pedersen, 1986), to more current models such as the Integrated Model of response to sport injury (Wiese-Bjornstal et al., 1998), which includes both stage and process type models, as well as the Biopsycholosocial Model (Brewer, Andersen, & Van Raalte, 2002). The Integrated Model states that the experience of the injured athlete is dynamic where cognitions, emotions, and behaviours as well as both personal and situational factors influence each other to determine the overall experience of the injured athlete (Wiese-Bjornstal, et al., 1998). Similarly, the Biopsychosocial Model looks at all factors associated with athletic injury and

rehabilitation as interconnected in influencing the physical and psychological outcome of the injury.

A variety of intervention methods have been used to try and help athletes through the difficult experience of an athletic injury. Specifically, researchers have focused on the role of social support for injured athletes; however, other psychological interventions have emerged to help injured athletes with the psychological aspect of the injury and rehabilitation (Bianco, 2000; Corbillon, Crossman & Jameson 2008; Myers, Peyton, & Jensen, 2004). Interventions such as positive self-talk, mental imagery and goal setting have been used to help athletes cope with athletic injuries and have been found to be successful. The use of these psychological techniques has been found to decrease recovery time, increase motivation, improve coping, and decrease negative affect associated with athletic injuries (Cupal & Brewer, 2001; Ievleva & Orlick, 1991; Wagman & Khelifa, 1996; Wiese & Weiss, 1987).

Oftentimes, when athletes are going through rehabilitation of an athletic injury, those around them are unaware of the things they can do to help with the psychological distress associated with the injury. The health care professionals who work with injured athletes play a key role in both their physical and psychological rehabilitation (Jevons & Johnston, 2003; Tracey, 2003; Tracey, 2008). Injured athletes spend a great deal of time with their health care professionals, and see them as an integral part of their rehabilitation both physically and psychologically (Tracey, 2003). Health care professionals also recognize the important role they play in rehabilitation (Hemmings & Povey, 2002; Jevon & Johnston, 2003; Mann, Grena, Indelicato, O'Neill, & George, 2007). Physiotherapists, athletics therapists, surgeons, and physicians treating injured athletes have all reported using a variety of psychological techniques and skills in their practice (Jevon & Johnston,

2003; Mann et al., 2007). To date, however, no research has addressed what role injured athletes see their health care professionals playing in the psychological aspect of injury. Moreover, little research has examined what athletes find most helpful in addressing the psychological aspect of their injury.

Given that injured athletes spend a great deal of time with their health care professional and that psychological adjustment is integral to their successful rehabilitation, athletes' perspective on the role of their health care professional in addressing their psychological concerns would seem to be an important component of rehabilitation. The present study sought to gain a better understanding of injured athletes' perspective of their health care professional's attention to psychological factors by addressing the following major research questions:

1. Do athletes think it is helpful for health care professionals to address the psychological aspect of injury?
2. What do athletes currently perceive their health care professionals to be doing to address the psychological aspect of their injury?
3. Are certain health care professionals addressing the psychological aspect of injury better than other health care professionals?
4. What do athletes find most helpful that their health care professionals do to address the psychological aspect of injury?
5. What would injured athletes like their health care professionals to do in order to better address the psychological aspect of injury?

It was hypothesized that injured athletes would think it was important for their health care professionals to address the psychological aspect of injury. Additionally, it was expected that some health care professionals, especially those who see injured

athletes on a more consistent basis, such as physiotherapists, and athletic therapists would address the psychological aspect of injury more often than health care professionals that see injured athletes on a less frequent basis such as physicians.

Review of Literature

Athletic Injuries

Participation in physical activity and sport comes with an inherent risk of injury (Heil, 1993). Millions of serious athletic injuries occur each year in North America, although the exact numbers are difficult to determine because of inconsistencies in injury tracking (Conn, Annest, & Gilchrist, 2003; Smith & Millner, 1994). Researchers over the past two decades have tried to address the complex nature of athletic injuries (Smith & Millner, 1994). Not surprisingly, the physical aspect of athletic injury tends to be the first aspect of the injury that is addressed and it has commanded research attention. More recently, however, the psychological aspect of injury has drawn attention in sport psychology research.

Models of Psychological Response to Athletic Injuries

With the initial research into the psychological aspect of athletic injuries (Weiss & Troxel, 1986) came the first models used to understand psychological response to athletic injuries. Researchers began by using previously established models derived from psychology research in order to explain psychological responses to injuries. One example of this is the Grief Model, originally proposed by Kubler-Ross (1969) and designed to help understand the psychological response to terminal illness. The Grief Model consists of five stages: denial, anger, bargaining, depression, and acceptance or reorganization. Another early model used by researchers in examining the psychological response to athletic injury was Seyle's 1974 Stress Model (1974). Both Weiss and Troxel (1986) and

Wiese and Weiss (1987) used Seyle's Stress Model (1974) to help simplify the process of the psychological response to athletic injury. According to the Stress Model, sports injuries are stressors which cause the individual to make a cognitive appraisal. This cognitive appraisal then prompts an emotional response which, in turn, influences behaviours. Lack of empirical evidence for either of these models for use with athletic injuries (Wiese-Bjornstal et al., 1998), prompted researchers to explore a cognitive-behavioural approach to the psychological aspect of sports injuries.

In 1993, Rose and Jevne proposed a conceptual model which was based on qualitative research. This was a stage model called the Risk Model. The stages in this model were identified as: getting injured, acknowledging the injury, dealing with the impact of the injury, and achieving a physical and psychosocial outcome (Rose & Jevne, 1993). This model focused on learning the lessons associated with athletic injuries (Wiese-Bjornstal et al., 1998).

In the early 1990s, researchers continued to seek a more appropriate model to address the psychological response to athletic injuries. Both theoretical and practical models were developed based on empirical evidence (Wiese-Bjornstal et al. 1998). In his review of stage-based versus process-based models of athletic injuries, Brewer (1994) suggested that cognitive appraisal models were the most appropriate in gaining an understanding of the psychological component of athletic injuries. Cognitive appraisal models suggest that the cognitive appraisal of the injury influences the emotional response which consequently affects the behavioural responses (Wiese & Weiss, 1987). Yet, Evans and Hardy (1995) argued that the new Grief Model in clinical psychology literature suggested that the grief process was more dynamic than static and thus should

again be considered for use in sport psychological research as a model for psychological response to athletic injuries.

These two models – cognitive appraisal and Grief Model - are not mutually exclusive and have provided the framework for what is a well established and frequently used model of psychological response to injury - the Integrated Model (Wiese-Bjornstal et al., 1998) (see Appendix A). The Integrated Model suggests that both pre- and post-injury factors influence the psychological response to injury which can and does change over time. There are bi-directional arrows within the model which showcase the dynamic nature of the sports injury rehabilitation process. The most common direction, however, seems to be that cognitive appraisal of the injury affects one's emotional response which, in turn, influences the actions one takes. This model can operate in the reverse direction, however, with behaviours influencing emotions and, in turn, cognitions (Wiese-Bjornstal et al., 1998).

Currently, the most widely used model of psychological response to injury is the Biopsychosocial Model (see Appendix B) developed by Brewer et al. (2002). This model was designed to integrate existing psychological models of the psychological response to sports injuries. The Biopsychosocial Model has seven components: injury, sociodemographic factors, biological factors, psychological factors, social factors, and contextual factors. According to this model, the injury initiates the rehabilitation process. The type, cause, severity, location and history of the injury then influence not only the biological factors but also the psychological, social, and contextual factors. Moreover, sociodemographic factors, such as age, gender, race, ethnicity, and socioeconomic status, influence biological, psychological, social, and contextual factors. Psychological factors, however, are central to the model and are believed to have a reciprocal relationship with

biological, social and contextual factors. The end point of the model, the sports injury rehabilitation outcome (functional performance, quality of life, treatment satisfaction, and readiness to return to sport) is determined by psychological factors and intermediate Biopsychological outcomes, such as range of motion, strength, joint laxity, pain endurance, and rate of recovery which are affected by biological and psychological factors. The paths between the psychological factors and Biopsychological outcomes are thought to be bidirectional (Brewer et al., 2002). The popularity of the Biopsychosocial Model is attributed to the fact that it takes into account the myriad factors that can influence the sport injury rehabilitation and outcomes. The fact that so many factors are considered in this model allows the researcher to be able to look at a wide scope of potential influencing factors in the rehabilitation outcome (Brewer & Cornelius, 2002). Although not all research articles identify the use of a specific model, the models of the response to athletic injury are the foundation of the understanding and prediction of response to athletic injury.

Psychological Response to Injury

As suggested in the Integrated Model and Biopsychosocial Model, the psychological component of athletic injury influences not only the emotional well-being of the athlete but also the physical well-being. Therefore, psychological factors are an essential area of research in order to fully understand the nature of athletic injuries as well as to help athletes fully recover from athletic injuries both physically and psychologically. It has been widely reported by researchers that almost all athletes who experience athletic injuries also have some sort of emotional response to the athletic injury (Jevon & Johnston, 2003; Johnston & Carroll, 1998; McDonald and Hardy, 1990; Tracey, 2003; Wiese-Bjornstal et al., 1998).

McDonald and Hardy (1990) provided some of the earliest research into the psychological responses to athletic injuries. In their study, five seriously injured athletes (i.e., athletes who had been expected to be out of play for at least three weeks) answered three different questionnaires, and participated in a semi-structured interview at four different times during the rehabilitation process. The researchers concluded that injured athletes do experience emotional reactions during the rehabilitation process. McDonald and Hardy (1990) worked from the Grief Model for this research and thus looked at the results of their research in a stage like manner based on the interviews at the four different time periods. Athletes in this study expressed such emotions as anger, confusion, fatigue, and depressed mood during the initial interview, with was conducted within 24 hours of their injury. These sorts of negative reactions seemed to continue during the second interview one week later. Their reactions seemed to progress from a more negative state in the beginning of the rehabilitation process to a more positive state by the end of the rehabilitation. By the end of the interviews four weeks later, both the interviews and the Profile of Mood States (POMS) (McNair, Lorr, & Droppleman, 1981) suggested a much more positive mood. According to McDonald and Hardy (1990), their results have indicated that adapting to the injury involves the athlete assuming responsibility for exerting an effort over a number of tasks in order to recover from the loss. These tasks included the athlete accepting the reality of the injury. In order to do this they must both experience and express the emotions involved and then must put their energy into the rehabilitation process (McDonald & Hardy, 1990).

Johnston and Carroll (1998) conducted a retrospective study of 16 athletes who had experienced an injury within the past 12 months. Participants reported feelings of shock and disbelief immediately following the injury. From the initial emotions

associated with the injury, athletes went on to assess the severity of the injury by assessing the pain, visual changes, and mobility constraints. The self-assessment of the injury seemed to dictate the emotional response the athlete would have towards to the injury. The initial shock and disbelief was followed by anxiety and depression as prevailing emotions. Additionally, athletes reported feelings of jealousy, regret, anger, depression, and frustration when faced with exposure to sports. Athletes also reported feelings of isolation while withdrawing from sports in order to minimize some of these negative emotions. By the end of the rehabilitation, however, the strongest emotion experienced by the athletes was impatience to return to play (Johnston & Carroll, 1998).

Tracey (2003) also used qualitative research methods in order to examine the psychological experience of injured athletes. Tracey interviewed ten collegiate athletes at three separate occasions following there injury: 24 to 72 hours post injury, one week post-injury, and three weeks post-injury. In the initial interview, athletes used words such as "angry, depressed, down, afraid, confused, frustrated, and worried" (p. 283) to describe their feelings immediately following their injury. They described feeling a "roller coaster of emotions" (p. 283). Some participants even reported that being injured had caused them to feel as though they had lower self-esteem and thus influenced how they felt about their value as a person. Additionally, injured athletes reported a sense of uncertainty, a fear of vulnerability and loss of independence.

In the second interview, one week post-injury, frustration was the most common negative feeling expressed, although athletes also consistently reported being fearful. Athletes feared such things as "missing practice, losing fitness, missing out, playing catch up and worried about how long they would be unable to participate" (Tracey, 2003, p. 284). By the time the third interview was conducted at three weeks post-injury, many

athletes had returned to play. These athletes, as well as those who were close to returning to play, had a much more positive affect as compared to those who had more serious injuries and would take longer to be able to return to play. Returning to participation in sports enhanced athletes' moods, increased confidence, reduced tension, and gave athletes a sense of being free again. Athletes who had not returned play continued to express frustration. They also reported feeling "alienated from the team" (p. 285), as well as feelings of loneliness and sadness (Tracey, 2003).

With use of the Integrated Model (Wiese-Bjornstal et al., 1998), Tracey (2003) also looked at the role that cognitions played in the emotional behaviour of the athletes. Four prevalent themes emerged in terms of cognitions related to the injury. These themes included: "internal thoughts, injury rehabilitation concerns, concerns about comparison to others, and looking ahead to the future" (p.286). These cognitions, as the Integrated Model would suggest, influenced the emotions the athletes experienced towards the injury. Such internal cognitions as worry or concern about the time they were going be away from their sport and what this meant caused athletes to feel "depressed, down, low self-esteem and increased anxiety" (p.286).

Other findings in Tracey's (2003) study were that injury and rehabilitation concerns, self-doubt and "what ifs" led to reported feelings of anger. Concern and comparison to others involved athletes worrying about things such as their fitness level in comparison to their teammates. These cognitions caused injured athletes to feel anxiety and tension as well as doubt their abilities to return to play. Athletes also experienced concerns in relation to their coaches. Injured athletes reported being worried about telling their diagnosis to their coach as they were concerned the coach's response which could lead to less playing time once they were able to return. On the other hand, looking ahead

to the future caused athletes to experience more positive emotions. This forward thinking seemed to enhance athletes' motivation to participate in rehabilitation. As they approached returning to play, however, these positive emotions became mixed with apprehension and tension (Tracey, 2003). Similar to the findings of previous research, this study revealed the range of emotions that athletes experience during the injury and rehabilitation process. It also showed how the Integrated Model could explain the relationship between cognitions and emotions in the psychological response to injury.

Vergeer (2006) also conducted research into the psychological response to injury by conducting a longitudinal case study. The case study was of a 28-year-old rugby player with a severe dislocation of his right shoulder. Eight interviews were conducted beginning three weeks after the injury and continuing at regular intervals until approximately five months post-injury. A long-term follow-up interview was then conducted three years post-injury. Vergeer identified four themes in his interviews. These themes were: awareness, mental imagery, mental model of the injury, and mental itinerary. Awareness was described as the way in which the injury was a dominant factor in the athlete's life. Mental imagery was described in a number of ways. First, the athlete described replaying the injury over and over. Second, the images were associated with physical sensations. This was particularly prevalent when the athlete was doing rehabilitation exercises and would picture what would happen inside his shoulder if he re-injured. Third, there were images of the injured shoulder being healthy again. The athlete reported images of being able to use his shoulder fully and these images triggered feelings of frustration (Vergeer, 2006).

The mental model of the injury in Vergeer's (2006) case study was described as the athlete's understanding of the injury and its ramifications. This included such things

as interpretation of symptoms, perception of progress, and what implication these things had on him. The mental model was determined by both the athlete's own bodily sensations, as well as interactions with medical personnel. The athlete spent a great deal of time focused on the extent of the damage as well as the long-term implications. These thoughts caused the athlete a great deal of distress and worry. Finally, the mental itinerary described the athlete's conception of the route to recovery. The athlete was uncertain of what the outcome of his injury would be and the timeline of his recovery, again causing concern and worry. The athlete was preoccupied with indicators about whether he would be able to play again and if he can when would he be able to return. Vergeer's (2006) study presented a different example of an athlete's response to injury yet again showed the intense psychological component that is present in athletic injuries.

Psychological Response- Impact on Physical Rehabilitation

The previously cited research suggests that there is a large psychological component to athletic injury. However, the common negative affect associated with athletic injuries is not only detrimental to the psychological well-being of athletes but to the physical well-being and success in rehabilitation as well. The Integrated Model of sports injuries, as previously discussed, states that cognitions and emotions not only affect each other but they also affect the physical rehabilitation from injury by influencing the behavioural aspect of rehabilitation for the athlete (Wiess-Bjornstal et al., 1998). Just as there has been a great deal of research on the psychological aspect of athletic injury alone, there has also been a substantial amount of research focusing on how this psychological aspect of athletic injures affects the behaviour of the athletes as well as the rehabilitation outcome.

One of the most common behaviours influenced by an athlete's psychological response to injury is adherence to a rehabilitation program. Rehabilitation adherence has been found to correlate significantly and positively with positive rehabilitation outcomes (Brewer, et al., 2000). Brewer and colleagues (2000) looked at this in athletes recovering from anterior cruciate ligament (ACL) injuries. The authors recruited patients who were awaiting ACL reconstruction followed by physical therapy to direct the rehabilitation from the surgery. Injured athletes were measured on scores of adherence to rehabilitation program, psychological measures, and knee laxity scores. The researchers found that psychological factors did play a significant role in the rehabilitation adherence. Self-motivation was shown to be a significant predictor of good rehabilitation adherence. Conversely, low athletic identity and high psychological distress where each found to be significant predictors of poor rehabilitation adherence (Brewer et al., 2000).

The relationship between cognitions, emotions, and behaviours is present not only during rehabilitation but also during the athlete's transition to returning to play. Kvist, Ek, Sporrstedt, and Good (2005) addressed this relationship by studying sixty-two individuals who had experienced an ACL injury within the preceding 3-4 years. In this study, 53% of participants returned to their pre-injury level of play. Twenty-four percent of athletes who did not return to play following their injury reported that this was due to a fear of re-injury. Athletes who did return to play generally experienced significantly less fear of re-injury, as reported using the Tampa Scale of Kinesiophobia (TSK), they also reported having a higher knee-related quality of life score as compared to those who did not return to play (Kvist et al., 2005).

There has also been research to suggest that certain psychological traits and/or skills may enhance the recovery of injured athletes. Wiese, Weiss and Yukelson (1987)

surveyed athletic trainers and found that athletic trainers perceived there to be certain characteristics which distinguished between those athletes who were the most and least successful in coping with their injury. Those athletes who coped best with their injury were more apt to display: "willingness to listen to the athletic trainer, positive attitude, intrinsic motivation, willingness to learn about the injury and rehabilitation techniques, determination/mental toughness, high self-esteem/confidence, use of goal setting, and emotional maturity" (Wiese et al., 1987, p. 20).

Hemmings and Povey (2002) also addressed the psychological commonalities among athletes who successfully cope with an athletic injury. Physiotherapists treating injured athletes reported compliance with treatment and rehabilitation programs and a positive attitude toward the injury and life in general, as being indicative of athletes who coped well with their injury. Conversely, those athletes who were less successful in coping with their injury displayed such behaviour as non-compliance with their rehabilitation program, impatience, and poor motivation. In a follow up to Hemmings and Povey's (2002) study, Arvinen-Barrow, Hemmings, Welgand, Becker and Booth (2007) found that a positive and proactive attitude towards the injury, and compliance with their treatment and rehabilitation program, predicted successful coping with the injury. Non-compliance, depression, and impatience were indicative of individuals who did not cope successfully with their injury.

Tripp, Stanish, Ebel-Lam, Brewer, and Birchard (2007) also found that there was a relationship between the psychological aspect of injury and physical outcomes. In there study of 49 recreational athletes it was found that fear of re-injury, and negative affect, were both associated were all significantly correlated with athletes confidence in their ability to return to sport. Specifically, athletes who noted higher negative affect doubted

there athletic ability more. Those participants who experienced greater fear of re-injury reported lower levels of participants in their current physical activities. Additionally, Tripp, Stanish, Coady, and Reardon (2004) gave 54 athletes who had suffered ACL injuries the McGill Pain Questionnaire 24 and 48 hours post operatively. The results of the questionnaire along with other measures of psychological states (i.e., anxiety, depression, and affect distress) indicated that anxiety level was the most significant predictor of pain following ACL reconstruction surgery.

Finally, a review was done of 10 studies which investigated the relationship between psychosocial factors, adherence and outcomes of rehabilitation after ACL injury and/or surgery (Mendonza, Patel, & Bassettm, 2007). It was found that there was a great deal of interplay between psychosocial factors and physical rehabilitation outcomes. Specifically, it was found that "motivation, a sense of personal control, social support, self-efficacy, and fear of re-injury" (Mendonza et al., 2007, p. 70) all have an impact on rehabilitation adherence. Additionally, it was reported that this rehabilitation adherence is positively associated with rehabilitation outcomes (Mendonza et al., 2007).

The aforementioned research highlights the fact that the psychological aspect of athletic injury affects both the psychological and physical recovery from injury, thereby further emphasizing the importance of addressing the psychological aspect of injury.

Social Support of Injured Athletes

It has been established that injured athletes often experience negative psychological responses to their injury and that these negative psychological responses often lead to negative physical side effects of their injury as well (Brewer et al., 2000; Wiese-Bjornstal et al., 1998). Once this relationship was established, researchers began to look for ways to improve the outcome of sports injury rehabilitation by addressing the

psychological aspect of injury. One specific way in which this has been done is by evaluating social support for its effect on the psychological well-being of injured athletes.

Bianco (2001) studied the social support of skiers recovering from injury. With data from ten elite downhill skiers, Bianco found that during each phase of the injury, injured athletes expressed distinct social support needs. The support needs described by athletes fell into three categories: emotional support, informational support, and tangible support. During the initial phase, immediately following the injury, athletes had either undergone surgery or were starting rehabilitation. Athletes reported that their support needs during this time were "practical assistance, shared social reality, and emotional comfort" (p.380). These needs were met both by members of the ski team and also their home support network. For these elite athletes, the practical support included such major things as arranging medical care, contacting families, arranging transport back to Canada right down to help with things such as packing luggage, bringing food or running errands for the injured athletes. The emotional support required included things such as consoling the athlete, sharing personal experiences and offering encouragement (Bianco, 2001).

Once the athletes in Bianco's (2001) study had started the rehabilitation phase, different people became involved in their social support system. These included health care professionals who were treating their injury. Athletes relied on the physicians involved with their treatment mostly for informational support such as diagnoses, amount of time for recovery, and chances of returning to elite level skiing. Physiotherapists, with whom the injured athletes had a great deal more contact time than physicians, played a greater role in the social support process. Some athletes even reported that their physiotherapist was their primary source of social support through their recovery process.

They felt it necessary that their physiotherapist acknowledge the importance of them returning to their highly competitive sport (Bianco, 2001).

During the final phase of the injury (i.e., return to full activity phase) in Bianco's (2002) study, which went from when they athlete was first allowed to return to training to the point where they felt they were fully recovered, athletes saw all involved parties as part of the social support at this time. The health care professionals were again expected to be a source of informational support by providing explicit instructions for the return to competition process. Coaches became a key supporter at this time by helping athletes to set realistic goals, rebuild confidence, overcome fears of re-injury, and showing confidence in the skier's ability to make a full recovery. Finally, from their teammates, the injured skiers did not have specific expectations of their role in social support but did feel that good camaraderie was important (Bianco, 2001).

As the findings of these studies indicate, social support is very important to the psychological well-being of injured athletes. Social support can come from a variety of sources including health care professionals, who are the focus of the present study. Aside from the formal psychological techniques that health care professionals can use with injured athletes, providing social support can be integral to the successful treatment of athletic injuries.

Psychological Skills used with Injured Athletes

Providing social support is not the only way to assist athletes with the psychological aspect of injury. Various psychological interventions and skills have been used to try and decrease the negative emotional experiences athletes often have after an athletic injury. Psychological interventions and skills can also serve to increase adherence, reduce anxiety and stress, as well as enhance recovery rates (Heaney, 2006).

Yet, despite these positive outcomes of sport psychology interventions, researchers suggest that they are rarely used by health care professionals treating injured athletes.

Ievleva and Orlick (1991) looked at the mental links to enhanced healing with injured athletes. More specifically, they addressed whether there was a relationship between psychological factors and recovery time from knee and ankle injuries. In the quantitative analysis of the survey, the top three psychological variables associated with faster recovery times were goal setting, positive self-talk, and imagery. In the qualitative analysis of the interviews athletes who recovered quicker reported taking more personal responsibility for their recovery by using such skills as visualization, determination, desire, attitude, and goal setting. Conversely, injured athletes who were slower to recover reported looking to external factors in their recovery, such as physiotherapy and rest. Interestingly, the fast healing group looked at recovery as something over which they had direct control, whereas the slow healing group looked at healing as something that happened to them (Ievleva & Orlick, 1991).

According to Wiese and Weiss (1987), there are a number of psychological interventions and skills that can be helpful to injured athletes. These techniques involve communication skills and motivational techniques. Wiese and Weiss (1987) assert that health care professionals can be taught these techniques through workshops and courses and that clear communication is essential immediately following the injury as an aid in the psychological recovery from injury. They maintain that aspects of the injury should be clearly explained to the athletes, coaches, and parents, and should include details about the injury as well as what to expect in the future. According to Wiese and Weiss (1987), this communication is important to minimizing the uncertainty associated with injury. Following the initial explanation of the injury, the athlete should receive an explanation

of the detailed treatment program for their injury and should be told what they can expect in terms of pain, mobility, and recovery. According to Wiese and Weiss (1987), the way in which the healthcare professionals communicate with injured athlete is also extremely important. Good listening skills are essential when relaying information to the injured athlete. Also maintaining good eye contact, conveying care and concern for the athlete and giving undivided attention to the athlete is extremely important in developing a good rapport.

According to Wiese and Weiss (1987), motivation is another important aspect of psychological recovery from injury in which health care professionals can aid injured athletes. They propose four main motivational techniques which health care professionals can implement: goal setting, relaxation and imagery, positive self-talk, and social support groups. By helping injured athletes to set and achieve short and long term goals health care professionals can help athletes achieve a sense of accomplishment that can be very motivating. Goals should be specific, measureable, and recorded. There should also be clear strategies for achieving these goals and they should be evaluated periodically and adapted if necessary. Goal setting can also allow athletes to feel a sense of control over their injury (Wiese & Weiss, 1987).

According to Wiese and Weiss (1987), relaxation, visualization, and imagery can be used together or separately to aid injured athletes in their recovery. These techniques can serve to reduce stress and anxiety associated with the injury. Pain can also be reduced by using these techniques by helping athletes to relax and cope with their injury. Additionally, athletes can use these techniques to rehearse the emotions they may experience upon their return to play. They can also practice physical and performance skills which are known as mastery rehearsal. This can enhance an injured athlete's

motivation by allowing them to continue to practice their sport even though they are not capable of physically training or competing because of their injury. Positive self-talk can also be used by healthcare professionals as a cognitive reframing technique. Injured athletes are often very focused on negative and irrational thoughts associated with their injury. By using this technique athletes can start to take responsibility for their own thoughts and actions and also increase their motivation (Wiese & Weiss, 1987).

Cupal and Brewer (2001) looked at the effects of relaxation and guided imagery on athletes recovering from ACL reconstruction. Individuals received ten individual sessions of relaxation and guided imagery along with physical therapy. Those who received the relaxation and guided imagery techniques had significantly higher knee strength scores than those in the control or placebo groups. Moreover, they had significantly lower re-injury anxiety and pain (Cupal & Brewer, 2001).

Heaney (2006) suggested that the best way to successfully integrate psychological interventions into athletic therapy is by considering three issues: education, basic skill development, and referral guidelines. In terms of education, athletic therapists need to be educated on the process and potential outcomes of sport psychology interventions with injured athletes. In addition, injured athletes should be educated on the role sport psychology can play in their rehabilitation. This can serve to reduce the negative stigma sometimes associated with psychological consultations. Basic skills in sport psychology interventions should be acquired by the athletic therapists as they are the "frontline" practitioners in treating injured athletes. Athletic therapists should provide injured athletes with social support and facilitate an environment for rehabilitation that includes encouraging psychological skills that can improve the rehabilitation process. This includes things such as adherence, motivation and goal setting. Finally, athletic therapists

should know when it is appropriate to refer an injured athlete for a sport psychology consultation. Written guidelines and standards would be helpful in insuring that those injured athletes who would most benefit from an additional psychological referral are receiving the care they require (Heaney, 2006).

Psychological Practice- Perspective of Health Care Professionals

Despite the fact that a great deal of research exists to suggest that psychological skills enhance recovery for injured athletes, there remains conflicting evidence as to how, when, and how often psychological strategies are being used by health care professionals when treating injured athletes. Health care professionals are often considered, by some, as the most appropriate people to address the psychological aspect of injury with injured athletes. Kolt and McEvoy (2003) indicated that physiotherapists, for instance, are usually the primary caretakers of injured athletes, often treating them on a day-to-day basis. They also appear to frequently discuss psychological issues with injured athletes. Physiotherapy techniques tend to involve touch which can facilitate a close relationship and often allows patients to open up to their physiotherapist. Indeed, this has led athletes to indicate that they believe physiotherapists are in the best position to address their psychological needs. Many of the attributes that have been studied in physiotherapists also carry over to other health care professionals making their practice in addressing the psychological aspect of athletic injuries in injured athletes a very important area of study.

Wiese, Weiss, and Yukelson (1987) surveyed athletic trainers on the use of psychological strategies with injured athletes. Out of twelve psychological strategies listed on the questionnaire, the athletic trainers indicated that nine were important or very important in facilitating coping with injured athletes. These nine were: communication skills of the trainer, positive reinforcement by the trainer, coach support for the athlete,

keeping the athlete involved with the team, having a realistic timeline to full recovery, focusing on short term goals, encouraging positive self thoughts, the athlete having a good understanding of the rehabilitation strategy, and variety in rehabilitation exercises. Conversely, the three strategies which were considered to be less important were giving the athlete an understanding of the injury mechanism, relaxation techniques, and visualization

Wiese et al. (1987) also had the athletic trainers indicate what knowledge of psychological strategies was important to their practice when treating injured athletes. Out of the twelve psychological strategies the athletic trainers indicated that they found seven to be important or very important. These strategies included: "using a positive and sincere communication style, setting realistic goals, encouraging positive self-thoughts, understanding individual motivation, enhancing self-confidence, understanding stress/anxiety, and reducing depression" (Wiese et al., 1987, p. 20).

Wagman and Khelifa (1996) also evaluated the knowledge and practice of athletic trainers in treating injured athletes. Based on their findings, Wagman and Khelifa developed guidelines for athletic trainers to address the psychological aspect of athletic injury with injured athletes. Firstly, the athletic trainer must do a patient assessment to determine if a psychological intervention is needed by trying to gain an understanding of the injured athlete's psychological state following the injury. In doing this intervention ten questions should be asked. These questions address the fear, anxiety, and depression levels of the athlete in addition to gaining insight into their social support system, and there understanding of the injury and rehabilitation. Secondly, the athletic trainer must assess whether the athlete is making appropriate progress in their rehabilitation and their level of adherence to their rehabilitation program. It is also advisable to assess whether

the athlete wants to return to competition and whether they feel capable of full recovery. Finally, the athletic trainer must assess whether the injured athlete seems to be displaying symptoms of "exercise addiction" and if their self-worth seems be have also been compromised during the athletic injury and rehabilitation process. The presence of one or more of these psychological difficulties is indicative of the need for some level of sport psychology intervention (Wagman & Khelifa, 1996).

Injured athletes may benefit from psychological intervention if they are dealing poorly with their injury not only to enhance rehabilitation and improve psychological well being, but also because in some rare incidents more serious psychological responses may be experienced. In a review of research in psychological responses to athletic injuries, Walker, Thatcher, and Lavallee (2007) reported that typical emotional responses to athletic injuries reported in research include: tension, anger, depression, frustration, and boredom. These authors also found that at times extreme emotional responses may be present including: relief from external pressures, strong feelings of loss. Additionally in a small percentage of injured athletes (10-20%) extreme reactions, especially depression levels above what is required for a clinical diagnosis may be present.

When referral to a psychologist or sports psychology consultant is necessary, Wagman and Khelifa (1996) developed a specific set of guidelines which included six separate steps. The first step was the initial consultation during which the sport psychologist gains an understanding of the injury and what it means to the athlete in addition to assessing the patient's psychological status. Step two is affect management. During step one affect issues were identified and during step two a more in-depth assessment of the emotions associated with the injury must be conducted. Step three is to facilitate communication which is intended to help the athlete to have a better

understanding of the nature, severity and likelihood of full rehabilitation from the injury. Step four is teaching the athlete general psychological skills, step five is facilitating social and emotional support, and finally step six is to help the athlete prepare for a return to sport.

Wagman and Khelifa (1996) also identified other psychological interventions which can be helpful to injured athletes struggling to cope with their injury. Cognitive restructuring is one such intervention in which the patient focuses on the replacement of any unproductive thoughts which could increase psychological distress. Rational emotive therapy helps to rid the injured athlete of irrational thoughts and beliefs associated with the injury. Systematic desensitization helps the injured athlete deal with fears associated with the injury via gradual exposure to the feared stimulus. Panic mitigation helps the athlete to rid themselves of anxiety and panic associated with the injury. Coping rehearsal aids the athlete to overcome obstacles by identifying potential problems and ways to deal with them. The injured athlete may also benefit from things such as confidence training, positive self-talk, relaxation skills, imagery, as well as motivation and concentration skills.

Hemmings and Povey (2002) examined physiotherapists' views on psychological aspects of injury and rehabilitation in the United Kingdom. Physiotherapists reported that they felt psychological factors were a very important aspect of sport injury and that they used a variety of psychological skills and techniques when treating injured athletes. These techniques included using a variety of rehabilitation exercises, making short term goals, and encouraging positive self-talk. Ninety percent reported that sports injuries affect an athlete both physically and psychologically and that the most common psychological issues they encountered when treating injured athletes were stress and anxiety as well as

exercise addiction. However, only eight percent had ever referred an injured athlete who was seemingly experiencing psychological distress to a sport psychologist and very few ever had access to a sport psychologist to make referrals when needed.

A follow up study to Hemmings and Povey (2002) was conducted, again in the UK, by Arvnen-Barrow et al. (2007). In this study, 99.7% of the responding physiotherapists believed that injured athletes experience psychological distress while coping with their injury. Overall, it was reported that athletes experience psychological distress in coping with injuries about 83% of the time while 43.2% of respondents reported that injuries have a psychological effect on an athlete 100% of the time. Physiotherapists reported many different techniques in addressing the psychological aspect of athletic injury while treating injured athletes. The most commonly used were setting short term goals, using a variety of rehabilitation exercises and encouraging athletes to use positive self-talk. Respondents in this study considered treating the psychological aspect of athletic injury as very important and that a specific course in sport psychology at the postgraduate level would be beneficial.

Niven (2007) also evaluated the perspective of sports physiotherapists. Instead of addressing just the psychological aspect of injury, however, adherence to rehabilitation was addressed more specifically. Niven identified factors that are indicative of good adherence and poor adherence in injured athlete through her survey of physiotherapists in the United Kingdom. Similar to Ievleva and Orlick (1991) in regards to a faster recovery, Niven found taking personal responsibility for the injury was a common factor in those who were more adherent to their rehabilitation program. She also identified being adaptable, educated, confident, used to pain and enjoying physical activity as being other factors that were indicative of good adherence. Niven also indicated that having good

social support, a good relationship with their physiotherapist, and an environment which facilitates healing were common factors in athletes who were more adherent to their rehabilitation program. Factors that influenced decreased levels of adherence included not having goals, not taking athletics seriously, being a recreational athlete, not taking responsibility for the injury, and making excuses. Maladaptive cognitions and negative emotions also were indicative of a low level of adherence to their rehabilitation program.

Washington-Lofgren, Westernan, Sullivan, and Nashman (2008) examined the role of an athletic trainer in the psychological recovery of injured athletes. They used a focus group of injured intercollegiate athletes to see their expectations of their athletic trainers in their psychological recovery from injury. Most of these athletes indicated that they felt their athletic trainer was qualified to deal with their negative feelings towards their injury. They also indicated that they felt it was part of the role of their athletic therapist to address the psychological recovery from injury as it is part of the rehabilitation process. Indeed, over half of the injured athletes said that they confide in their athletic therapist things that they may not tell others. The injured athletes saw athletic trainers as a source of motivation in their rehabilitation process (Washington-Lofgren et al., 2008).

Mann et al. (2007) specifically surveyed sport medicine physicians about how they addressed the psychological aspect of athletic injuries in their practices. Eighty percent of physicians surveyed reported that they often or sometimes discuss behavioural and emotional problems related to injury with injured athletes. The most common things they discussed were: fear about re-injury, fear about surgery, having patience with the rehabilitation and recovery process, and concerns about how the consequences of their injury will affect others. Almost two thirds of the sports medicine physicians indicated

that they felt they were the only people who were aware of the problems an injured athlete experiences. Generally, these sports medicine physicians reported feeling comfortable with addressing psychological issues related to sports injuries with their patients.

Family physicians and internists in Mann et al.'s (2007) study more frequently reported that they often discussed injury related psychological issues with their patients as compared to physicians with different specialities. Orthopaedic surgeons were significantly more likely to report that they rarely or never addressed psychological issues with injured athletes they were treating than physicians of any other speciality. Orthopaedic surgeons also reported being less comfortable with discussing psychology issues related to the athletic injuries with their patients as were paediatricians. Orthopaedic surgeons showed the least interest in having additional training in dealing with injury-related psychological distress. Only 19% of all physicians surveyed reported adequate availability of sport psychologists and other mental health care professionals who have expertise in treating injured athletes (Mann et al., 2007).

Tracey (2008) conducted interviews with health care professionals treating injured athletes about their roles in the psychological rehabilitation of the injured athletes they treat and a number of themes emerged from these interviews. Firstly, the health care professionals saw themselves as being a rapport builder. Building good rapport with the injured athlete was seen to be very important and involved honesty, trust, and professional credibility. The health care professionals also identified the importance of being a "sales person" so as to get the injured athlete to "buy into" the treatment. These professionals saw themselves as educators - describing not only the anatomy of the injury but also providing education to reduce fear of injury and recovery, and in articulating

treatment options. Finally, they saw themselves as communicators. They had to be a good listener, as well as providing reassurance and displaying patience with the athletes they treat. By doing this they built confidence, learned more about the individual and the injury, and better balanced both understanding and realism (Tracey, 2008).

So far, researchers have established that there is a strong psychological aspect to athletic injuries. More specifically, athletes report experiencing a great deal of psychological distress throughout their injury and rehabilitation process (Jevon & Johnston, 2003; Johnston & Carroll, 1998; McDonald & Hardy, 1990; Tracey, 2003). In addition, researchers have determined that this psychological response to injury impacts not only an injured athlete's psychological well-being but also their physical well-being including their rehabilitation outcome (Brewer et al., 2000; Kvist et al., 2005; Wiese-Bjornstal et al., 1998). Therefore, it is important to find ways to reduce the psychological distress experienced by athletes via interventions designed to enhance the individual's psychological well-being. This can include targeting things such as social support (Bianco, 2001), as well as motivation, relaxation techniques, and imagery (Wiese & Weiss, 1987). Such interventions can serve to increase adherence, reduce anxiety and stress, and enhance recovery rates (Heaney, 2006). Health care professionals, specifically those who see injured athletes on a regular basis, are thought to be ideally situated to address the psychological aspect of injury with athletes and to facilitate skill acquisition and practice (Kolt & McEvoy, 2003). Some health care professionals (e.g., sports medicine physicians) report addressing the psychological aspect of injury within their practice and using some of these interventions with the athletes they treat (Mann et al., 2007; Tracey, 2008; Hemmings & Povey, 2002; Arvnen-Barrow et al., 2007). What is missing from the picture is the perspective of injured athletes in respect to health care

professionals addressing the psychological aspect of their injuries. Specifically whether athletes think their psychological needs are being adequately addressed.

Since health care professionals play such a large role in the recovery of injured athletes, both their physical and psychological recovery, it is important to understand how health care professionals are addressing the psychological aspects of injury with the injured athletes they treat. A number of studies have looked at this from the perspective of the health care professional (Arvnen-Barrow et al., 2007; Hemmings & Povey, 2002; Mann et al., 2007; Tracey, 2008) however to date, very little research has addressed this aspect of rehabilitation from the perspective of the injured athlete. The purpose of the present research project was to examine what role athletes perceive health care professionals play in the psychological rehabilitation of injured athletes. Examination of the role of health care professionals in addressing the psychological aspect of injury from the perspective in injured athletes could serve to ensure that the psychological needs of injured athletes are being met during their injury and rehabilitation. Additionally, it could help to clarify the role of health care professionals as well as mental health care professionals in addressing the psychological aspect of injury with injured athletes they treat. This project was guided by the following major research questions:

1. Do athletes think it is helpful for health care professionals to address the psychological aspect of injury?
2. What do athletes currently perceive their health care professionals are doing to address the psychological aspect of their injury?
3. Are certain health care professionals addressing the psychological aspect of injury better than other health care professionals?

4. What do athletes find most helpful that their health care professionals do to address the psychological aspect of injury?

5. What would injured athletes like their health care professionals to in order to better address the psychological aspect of injury?

In reference to research question number one it was hypothesized that injured athletes would think it was helpful to have health care professionals address the psychological aspect of injury within their treatment. With respect to research question number two it was hypothesized that injured athletes would perceive health care professionals would address fear of re-injury and use goal setting most often of the indicated psychological skills and aspects injury. This is based on what health care professionals indicate addressing most often in Mann et al.'s (2007) study. For research question number three it is hypothesised that injured athletes will perceive their physiotherapists and athletic therapists addressing the psychological aspect of injury best and most often due to the greater amount of time injured athletes spend with these health care professionals as compared to physicians. Research questions number four and five will be addressed using qualitative research methods and therefore did not have specific hypothesis.

Method

Participants

Recruitment of this study took place in various health clinics across Canada where injured athletes were being treated. In order to participate in this study, potential participants had to meet the following inclusion criteria:

1. Be over 18 years of age

2. Have suffered a moderate-to-severe athletic injury (one which prevented play or practice for greater than 7 consecutive days) within the past year. A moderate athletic injury is defined as being out of play and practice for 8-28 days and a severe athletic injury is defined as being out of play and practice for greater than 28 days (Fuller et al., 2006).

3. Have been treated by at least one health care professional during this injury and rehabilitation process

Procedure

Ethics approval was obtained from the Wilfrid Laurier University Research Ethics Review Board prior to data collection. Health care professionals from various physiotherapy clinics, both privately owned and university-based, were approached by the researcher with an information letter (see Appendix C). The letter explained the role of the health care professional in the study. If the health care professional agreed to help with data collection, they contacted the researcher and were sent a package with informed consent letters (see Appendix D) and stamped self-addressed envelopes. Injured athletes, both male and female, who met the inclusion criteria for the study were to be identified by the health care professionals and asked to complete the informed consent form. The informed consent involved the participant signing that they agreed to be in the study, indicating that they would allow direct quotes to be used, and providing the researcher with their email or mailing address. As soon as the researcher received their contact information, participants were contacted to confirm the email address and to welcome them to the study. Participants were informed that they would be contacted again in four weeks with the link to the online questionnaire. It had been decided that the participant would be sent the questionnaire four weeks after receipt of contact information. This

would allow adequate time for them to visit the health care professionals involved in their rehabilitation frequently enough that they would be able to complete the questionnaire.

The questionnaire was available online which allowed for injured athletes from various regions of Canada to participate. Online questionnaires have an increased response rate and speed and are also more cost effective than postal questionnaires (Sheehan & Hoy, 1999). The questionnaire was designed and implemented using an online survey tool called SurveyMonkey™ (Finley). SurveyMonkey™ is a password protected website which ensures the confidentiality and anonymity of the participants as it also does not collect Internet Protocol (IP) addresses.

A questionnaire, rather than interviews, was used in order to be able to access a variety of participants from various places across the country to ensure that they were reporting on experiences with a number of different health care professionals. Additionally, a questionnaire allows for data from more participants to be received and managed by the researcher. Also a questionnaire of this type allows for anonymity which was essential so that participants could openly discuss their experiences with their health care professionals without concerns that they health care professional may somehow know what was said.

Measures

Demographics Questionnaire. An author-constructed demographics measure asked participants about their age, sex, occupation, injury date, return to play status, time out of play, description of injury, injury location, sport in which injured, other sports participated in, level of competition, mechanism of injury, whether they had had surgery, and what health care professionals they had seen.

Mann's Sports Medicine Sports Psychology Survey. The Sports Medicine Sport Psychology Survey was developed by Mann et al. (2007) from a literature review of psychological issues typically assessed in sport psychology research. Mann et al. collected input on the survey from five sports medicine physicians. The survey was designed to have physicians report on how often they addressed the psychological aspect of injury with athletes. The original survey was divided into four sections. This questionnaire was obtained from the author and was then adapted for the purposes of this study to assess the experiences of injured athletes with their health care professionals. Only the second and fourth sections were pertinent to the present investigation, thus they were modified for the purpose of this study. An additional section was then added which asked athletes to indicate their level of psychological distress during the injury and rehabilitation process. This became the first section of the adapted questionnaire. The second part was divided into sections (Mann's original section 2 and section 4) for the injured athlete to report on how each health care professional addressed the psychological aspect of injury. It included a measure of how frequently the health care professional addressed a number of issues specifically related to injury and rehabilitation. This section also included a measure of how frequently each health care professional used psychological techniques during the injured athlete's rehabilitation. The adaptations were based on literature review regarding psychological issues of injured athletes and effective psychological interventions during injury rehabilitation.

Only questions deemed pertinent to the present study remained in the questionnaire. Questions were modified to accommodate the injured athlete's versus attending physician's perspective. Non-injury related psychological issues (e.g., disordered eating, sexual orientation, alcohol/drug abuse) were excluded because these

were deemed not relevant to the current research questions. Other questions were added to the questionnaire so as to gain a more complete understanding of the athlete's experiences. For example, the participants were asked to rate their level of satisfaction with each of their health care professionals in terms of how well he or she addressed the psychological and physical aspects of their injury, as well as the overall care provided. Lastly, qualitative questions were added in order to address the following research questions: What do athletes find most helpful that their health care professionals do to address the psychological aspect of injury? And what would injured athletes like their health care professionals to in order to better address the psychological aspect of injury? The final questionnaire was then titled Adapted Sport Medicine Sport Psychology Questionnaire (ASMSP-Q) (see Appendix E).

Statistical Analysis

Data analysis was completed using SPSS version 17.0 (SPSS, Inc., 2008). Frequency tables were created showing descriptive statistics of participants in this study including: sex, occupation, return to play status, description of injury, injury location, sport in which injured, level of competition, mechanism of injury (contact or non-contact), whether the participant had had surgery, and what health care professionals they had seen. Additionally, the participants' means and standard deviations of age, time between injury and questionnaire completion, and time off play or predicted time off play were calculated. Frequency tables were also developed to look at the psychological response to injury they reported in question 1 and 2 of the ASMSP-Q. Means and standard deviations were then calculated for how many visits participants had with each health care professional.

Frequency tables were then completed for all of the health care professionals the participants were asked about in this study. This included their sex and age categories, as well as how often they addressed the psychological aspect of injury (questions 3 and 4 in each health care professional section in the ASMSP-Q) and then the satisfaction with both the physical and psychological care they provided. Additionally, a new variable was calculated in SPSS (SPSS Inc., 2008) for the total score of the emotional response to injury. This was calculated by added all scores on question 1 in the ASMSP-Q which asked about the participants' psychological response to injury. In the 'Final Questions' section of the questionnaire, frequency tables were developed to show which health care professional participants thought attended best to the psychological aspect of injury and then physical aspect of injury and which health care professional was perceived by participants as providing the best overall care and whether the participants thought health care professionals should address both the physical and psychological aspect of injury. Percentages were also calculated on how often participants reported each different type of health care professional addressed each psychological aspect of injury and how often overall each aspect of injury was discussed.

Qualitative Analysis

Analysis of the open-ended or qualitative questions in this data was conducted by the researcher using the following steps (Tracey, 2008):

1. Open-coding: Responses were reviewed word for word to look for commonalities in words or phrases and an initial list of commonalities was compiled.
2. Responses to each question were summarized to continue to look for additionally commonalities.

3. After analysis number 2 all questions between participants were compared.
4. Using analysis number 3 a full review of data was done to add or omit pertinent information from which a broad list of themes was identified.
5. Generating over-all themes was completed by a review of all the data.
6. The previous steps were completed by a researcher trained in qualitative research methods.
7. Results were compared between the two researchers.
8. Final themes were determined based on a comparison of themes determined by the two researchers.

Results

Once surveys were completed online, data was entered into SPSS (SPSS, Inc., 2008). The total number of respondents to the questionnaire was 23, all of which were included in data analysis. The mean age of the participants was 21.48 (SD= 2.12) years with a range of 19 to 29. There were 13 female and 10 male participants. Twenty-two of the participants were students and one was a teacher. Thirteen had returned to play since the injury and nine had not. One person did not respond to the question. Twenty participants were varsity athletes and three were recreational athletes.

The sample included a variety of different injuries from participation in a variety of different sports (See Table 1). Seventeen of the injuries were non-contact, while six involved contact. Seventeen participants had not had surgery, while six had undergone surgery at the time of survey completion. For those participants who had returned to play, they had been off play for an average of 6.96 (SD=6.27) weeks with a range of one to 24 weeks off play. For those participants who had not yet returned to play, their average

expected time off play was 43.38 (SD=16.03) weeks with a range from 15 to 52 weeks. Additionally, participants reported a wide variety of injuries which are summarized in Table 2.

Table 1

Sport in which injuries occurred identified by participants in sample

	Total Participants	Percent
Soccer	7	30.4
Cross-country running	3	13
Rugby	3	13
Baseball	2	8.7
Basketball	2	8.7
Football	2	8.7
Snowboarding	1	4.3
Hockey	1	4.3
Missing	2	8.7

Table 2

Areas of injury identified by participants in the sample

	Total	Percentage
Knee	10	43.5
Foot	3	13
Ankle	3	13
Concussion	2	8.7
Hamstring	2	8.7

Hand	1	4.3
Hip	1	4.3
Back	1	4.3

All participants had seen at least one health care professional throughout the injury and rehabilitation process. Overall they reported 58 experiences with health care professionals, meaning that when adding up all the health care professionals seen by the participants the total was 58. The health care professional most commonly seen by the participants was the physiotherapist with 60.9% of participants seeing one followed by athletic therapists at 56.5% and sports medicine physicians at 47.8%. The health care professional who participants paid the most visits to during their rehabilitation was athletic therapists averaging 26.12 (SD=18.48) visits for those participants who indicated they had seen an athletic therapist. This was followed by physiotherapist with an average of 19.83 (SD=26.87) visits.

In terms of emotional response to injury, all participants noted at least some level of psychological distress throughout the injury and rehabilitation process. Frustration was the most commonly reported emotion experienced following an injury with 91.4% reporting that they 'often' or 'sometimes' experienced frustration. Table 3 shows how participants endorsed the frequency of each of the emotions. All participants reported experiencing at least some psychological distress in specific aspects of their injury. Most commonly reported were 'recovering slower than you expected' with 73.9% of participants reporting that they experienced this 'sometimes' or 'often' and 'fear of re-injury' with 73.9% of participants reporting that they 'sometimes' or 'often' experienced this fear (see Table 4). None of the participants in this study had seen a mental health care

professional during their current injury and rehabilitation process, however, 47.8% thought this would have been helpful.

Table 3

Frequency of participants experiencing different types of psychological distress following injury

	Never (%)	Rarely (%)	Sometimes (%)	Often (%)
Fear	21.7	43.5	21.7	13
Anger	8.7	8.7	39.1	43.5
Worry	4.3	26.1	47.8	21.7
Shock	60.9	21.7	17.4	0
Regret	39.1	13	30.4	17.4
Apathy	34.8	43.5	21.7	0
Sadness	17.4	17.4	39.1	26.1
Anxiety	21.7	17.4	34.8	26.1
Jealousy	26.1	17.4	39.1	17.4
Boredom	26.1	13	30.4	30.4
Confusion	52.2	26.1	17.4	4.3
Irritability	17.4	8.7	30.4	43.5
Frustration	4.3	0	17.4	73.9
Depression	30.4	26.1	30.4	8.7
Helplessness	34.8	13	21.7	8.7
Loss of Identity	52.2	17.4	34.8	17.4
Tiredness or fatigue	43.5	26.1	26.1	4.3

Discouraged about the future	17.4	26.1	43.5	13

Table 4

Frequency of participants experiencing psychological distress impacting physical recovery

	Never (%)	Rarely (%)	Sometimes (%)	Often (%)
Lack of motivation	26.1	13	47.8	13
Trouble sleeping	21.7	43.5	17.4	17.4
Trouble adhering to rehabilitation program	30.4	43.5	21.7	4.3
Trying to return to play against medical advice	34.8	17.4	34.8	13
Recovering slower than you expected	13	13	26.1	47.8
Recovering slower than your health care professional expected	17.4	34.8	21.7	26.1
Fear that prevents you from completing rehabilitation program	52.2	34.8	13	0
Fear you will never fully recover	21.7	17.4	43.5	17.4
Fear of re-injury	0	26.1	39.1	34.8

Family Physicians

Seven participants or 30.4% of the sample saw a family physician during their rehabilitation. These participants reported seeing their family physician for 3.33 (SD=3.12) visits, on average. Of these family physicians, all seven were male and all were estimated as being between the ages of 30 and 50. Injured athletes perceived family physicians to discuss 'concerns that the consequences of the injury will disappoint others most frequently, with 71.4% indicating their family physician discussed this 'sometimes' or 'often'. This was followed 'frustration associated with injury' with 57.2% stating their

family physician discussed this aspect 'sometimes' or 'often'. The least commonly discussed psychological aspect of injury as perceived by the injured athletes in this study was 'concerns about weight loss or gain following the injury'. All of the participants who saw a family physician indicated the family physician 'rarely' or 'never' discussed this psychological aspect of injury. Appendix (F) depicts the full breakdown of how often the participants thought that their family physicians addressed the psychological aspects of their injury. With regard to the use of psychological skills injured athletes in this study indicated that family physicians rarely used psychological skills in their treatment. According to participants over 70% of the family physicians they saw used all the listed psychological skills 'rarely' or 'never'. Appendix (G) depicts the specific figures of how often the health care professionals reportedly employed psychological skills with the injured athletes. All participants who saw a family physician reported being 'somewhat' or 'very' satisfied with the physical care the received from their family physician. They indicated being less satisfied, however, with the psychological care provided by their family physician with 42.9% reporting being only 'somewhat' satisfied or 'very' unsatisfied with the psychological care they received from their family physician.

Orthopaedic Surgeon

Six participants or 21.7% of participants met with an orthopaedic surgeon during their rehabilitation process. Participants who saw an orthopaedic surgeon reported 4.60 (SD=5.87) visits, on average. All of the orthopaedic surgeons were male. One was indicated to be under 30, four were assumed to be in the 30 to 50 age category, and one other was in the over 50 category. In addressing the psychological aspect of injury participants indicated orthopaedic surgeons most often addressed 'fears about surgery' (83.4% said it was discussed 'sometime' or 'often') followed up 'concerns and self-doubt

about not being able to perform at the same level after the injury/surgery' (56.7% said it was discussed 'sometimes' or 'often'). The least commonly discussed psychological aspects of injury according to participants were 'concerns about weight loss or gain following the injury', 'dependence on pain killers' and 'inability to motivate self to engage in rehabilitation tasks' all of which participants indicated were discussed 'never' 83.4% of the time. Appendix (H) depicts the complete breakdown of how often the participants thought that their orthopaedic surgeon addressed the psychological aspect of their injury. In terms of the use of psychological skills long and short term goals were reported being used most frequently with 66.7% and 83.3% reporting their orthopaedic surgeon used these skills 'sometimes' or 'often'. The psychological skills that were reported as being least used were imagery, social support with other injured athletes and relaxation skills all of which were reported as being used 'never' or 'rarely' by orthopaedic surgeons. Appendix (I) indicates how often the orthopaedic surgeon reportedly used psychological skills with the participants in their practice. In terms of satisfaction with physical care, all of the participants who saw an orthopaedic surgeon reported being 'somewhat' or 'very' satisfied with the physical care they received, while 83.3% of the participants were 'somewhat' or 'very' satisfied with the quality of the psychological care they received from their orthopaedic surgeon.

Sports Medicine Physician

Ten participants or 39.1% of participants saw a sports medicine physician during their rehabilitation. Participants who saw a sports medicine physician had a mean of 4.31(SD=6.41) visits. All of the sports medicine physicians were male. Two were thought to be under 30 while the other seven were perceived to be between 30 and 50. Participants indicated sports that there were no psychological aspects of injury which their sports

medicine physician address 'often' however 'fears of re-injury' was reported as the most commonly discussed psychological aspect with 66.7% indicating it was discussed 'sometimes'. Appendix (J) demonstrates how the participants thought the sports medicine physicians they saw addressed all of the different dimensions of the psychological aspect of their injuries. As you can see from Appendix J no participants indicated that their sports medicine physician addressed any of the listed psychological aspects of injury often. Again, long and short term goals were indicated as most frequently discussed by sports medicine physicians however the frequency with which they were used was rather low. Twenty-five percent indicated long term goals were used 'sometimes' or 'often' while 37.5% indicated short term goals were 'sometimes' or 'often' used. Imagery was reported as the least commonly used skill with all participants indicating it was never used by their sports medicine physician. Appendix (K) demonstrates the psychological skills each participant thought their sports medicine physician used in their treatment.. Appendix K notes that only long term goals were ever reported as being 'often' used by the sports medicine physician. In terms of satisfaction 75% of participants who saw a sports medicine physician were 'somewhat' or 'very' satisfied with the physical care they received while 62.5% indicated they were somewhat or very satisfied with the psychological care they received.

Other Physician

In the online questionnaire there was a place for participants to indicate if they had seen another physician (other than the ones indicated). Although two participants indicated that they had seen another physician during their rehabilitation, neither identified the type or speciality of the physician. Only one participant indicated how many visits they had had with their other physician which was one. Both of the other

physicians were male. One was thought to be under 30, while the other was thought to be within the 30 to 50 age range. Appendix (L) indicates how often these participants thought their other physician addressed the indicated psychological aspects of injury and Appendix (M) how often they used specific psychological skills. In terms of satisfaction, one participant did not answer the physical care question while the other indicated that s/he was 'somewhat dissatisfied' with the physical care and psychological care received. The participant who did not answer the physical care question indicated being 'somewhat satisfied' with the physical care received.

Physiotherapist

Fourteen of the 23 participants, or 60.9%, indicated they had seen a physiotherapist during their rehabilitation. Participants who had seen a physiotherapist had a mean of 19.83 (SD= 26.87) visits. Six of the participants reported having seen a female physiotherapist while seven said they had seen a male physiotherapist. Three participants thought their physiotherapist was under 30, nine thought they were between 30 and 50 years, and one thought that their physiotherapist was over 50. In terms of addressing the psychological aspect of injury participants reported that their physiotherapists most often addressed 'fear of re-injury' (91.7% indicated this was discussed 'sometimes' or 'often'). This was followed by 'concerns and self-doubt about not being able to perform at the same level after the injury/surgery' and 'emotions associated with the injury'. Appendix (N) shows the complete list of how often the participants thought their physiotherapist addressed the indicated psychological aspects of injury. The least frequently discussed psychological aspects of injury as perceived by the injured athletes were 'dependence on pain killers' and 'inability to motivate self to engage in rehabilitation tasks' both of which participants noted were addressed 'never' or

'rarely' 83.3% of the time. With regards to the use of psychological skills long and short term goal setting were perceived by participants to be used the most often (58.3% and 66.7% indicate these being used 'sometimes' or 'often'). Imagery and relaxation skills were reported as being the least used skills with 83.4% reporting they were used 'rarely' or 'never'. See Appendix (O) for a complete list of how often participants perceived the use of specific psychological skills. In terms of physical care, 12 of the participants, or 92.3% , indicated that they were 'somewhat' or 'very' satisfied with the physical care they received from their physiotherapist while ten participants, or 77%, indicated that they were 'somewhat' or 'very' satisfied with the psychological care they received from their physiotherapist.

Athletic Therapist

Thirteen of the 23 participants, or 56.5%, indicated they had seen an athletic therapist during their rehabilitation. Participants who saw an athletic therapist had 26.12(SD=18.48). Eight reported they had seen a female athletic therapist and five had seen a male athletic therapist. Three reported that they thought their athletic therapist was under 30 while 10 reported they thought their athletic therapist was between the ages of 30 and 50. In terms of addressing the psychological aspect of injury participants reported that athletic therapists addressed 'fears of re-injury' and 'emotions associated with the injury' most often (69.3% reported each was addressed 'sometimes' or 'often'). 'Concerns about weight loss or gain following the injury' was reported by participants as being the least commonly discussed psychological aspect of injury (92.3% reported it being discussed 'rarely' or 'never'). Appendix (P) indicates how often the participants thought their athletic therapist addressed the complete list of psychological aspects of injury. In terms of the use of psychological skills long and short terms goals were

reported as most commonly discussed (77% and 84.6% reported it being discussed 'sometimes' or 'often'). The skill reported being used least often was relaxation skills with 92.3% of participants indicating relaxation skills being uses 'never'. Appendix (Q) shows how often participants reported specific psychological skills being used. In terms of physical care 12 of the 13 participants, or 92.3%, who saw an athletic therapist indicated they were 'somewhat' or very satisfied with the physical care their received while 11 out of 12 (91.6%) respondents indicated that they were 'somewhat' or 'very' satisfied with the psychological care they received from their athletic therapist.

Massage Therapist

Three of the 23 participants, or 13%, indicated they had seen a massage therapist during their rehabilitation. Participants who had seen a massage therapist had a mean of 5.00 (SD=6.73) visits. Two indicated that their massage therapist was female with one not responding and two indicated that their massage therapist was under 30 while 1 thought their massage therapist was between 30 and 50. Appendix (R) indicate how often participants thought their massage therapist address the indicated psychological aspects of injury and Appendix (S) how often participants thought the massage therapists used specific psychological skills. All participants who saw a massage therapist where 'somewhat' or 'very' satisfied with the physical and psychological care they received from their massage therapist.

Chiropractor

Two of the 23 participants (8.7%) saw a chiropractor during their rehabilitation. Participants who saw a chiropractor had a mean of 9.33(SD=9.24) visits. Both of the chiropractors seen by participants were male and both were estimated to be between the ages of 30 and 50. Appendix (T) indicate the how often the participants thought the

chiropractor they saw addressed the indicated psychological aspects of injury and Appendix (U) how often they used the specific psychological skills. Both of the participants indicated they were 'very' satisfied with the psychological care they received from their chiropractor they saw while they indicated being 'somewhat' satisfied and 'somewhat' unsatisfied with the psychological care respectively.

Other Health Care Professional

Three of 23 participants or 13% of participants indicated that they saw another health care professional during their rehabilitation. Two indicated that they saw another physiotherapist while one indicated that she/he had seen a concussion specialist.

Research Questions

To answer the first research question, participants were asked whether they thought it was helpful for health care professionals to address both the physical and psychological aspects of injury. Nineteen participants responded to this question. Of the nineteen respondents, 18 or 94.7% responded 'yes' meaning they did think it was helpful to have the psychological aspect of injury addressed by their health care professionals.

The second research question was concerning what athletes currently perceive their health care professionals to be doing to address the psychological aspect of their injury. In looking at the frequency of which participants perceived that each health care professional addressed the psychological aspect of injury it was determined that participants perceived health care professionals to be addressing certain psychological aspect of injury more often than others. Most often participants reported that their health care professionals addressed their fear of re-injury. This was perceived to be the most commonly addressed psychological aspect of injury by sports medicine physicians, physiotherapists and athletic therapists. The least common items participants reported that

their health care professional discussed with them were concerns about weight loss or gain following the injury with family physicians, orthopaedic surgeons and athletic therapists perceived as addressing this least often. This was followed by dependence on painkillers and inability to motivate self which were each reported as the least frequently discussed psychological aspect of injury by two health care professionals.

With respect to the use of specific psychological skills long term goal setting and short term goal setting which were reported by participants as the two most frequently by all health care professionals. The skills that were used the least, as reported by participants, were imagery and relaxations skills which were reported as being the least frequently used skills by all health care professionals.

To address the third research question as to whether some health care professionals are addressing the psychological aspect of injury better than other health care professionals a number of the questions in both the quantitative and qualitative data were used. Participants were asked which health care professionals they thought provided them with the best psychological care for their injury during their rehabilitation. Nineteen participants responded to this question. Eight or 42.1% reported that it was the athletic therapist to provide them with the best psychological care during their injury. Six participants (31.6%) indicated the physiotherapist, one (4.3%) indicated the sports medicine physician, and one (4.3%) indicated the chiropractor and three (15.8%) reported that none of the health care professionals they saw provided them with the best psychological care during their rehabilitation.

To answer research questions 4 and 5 regarding what athletes find most helpful that their health care professionals do to address the psychological aspect of injury and what injured athletes like their health care professionals to in order to better address the

psychological aspect of injury analysis of the qualitative data from the questionnaire was completed. Generally some participants indicated the most helpful things their health care professionals did (question 4) was also what other participants indicated they would have liked their health care professionals to do (question 5). Therefore the data collected which answered both of these research questions will be presented together to show the overall themes that emerged from the data.

The first theme to emerge from this data was education. Participants identified providing them with education about their injury, rehabilitation and return to play as a strength of those health care professionals who they thought addressed the psychological aspect of injury well. Additionally, participants indicated that providing more education was something that other health care professionals could have done to better address the psychological aspect of injury.

Participants reported wanting education in a variety of different areas, specifically about injury, rehabilitation, and return to play. A lack of understanding about their injury was a large concern for participants. This concern was well explained by one participant who said:

> We need the understanding of what happened and how to deal with what is going on...the worst part for me was the lack of understanding I had with my injury. I would show up and get treatment and then leave. I felt that I could have used more info on the injury.

This idea was echoed by other participants who reported wanting education that was specific to their injury. It was reported by some participants that they wished their health care professionals had explained more about the injury and surgery, one in particular noted that "[she] had to read a lot on [her] own to find out what was going to be done."

Participants also wanted specific information about the rehabilitation process. One participant said that a strength of his family physician was that they helped to explain the length of the rehabilitation better than anyone else did. The timeline of rehabilitation and return to play was something that participants frequently mentioned as being an important area in which they desired education. Participants noted that being educated by their health care professionals on the risks of returning to play too soon and the importance of adhering to their rehabilitation program was helpful. Those who did not get this education said it was something they felt would have helped to better address the psychological aspect of their injury. One participant stated that the sports medicine physician "spoke to me directly about not rushing back into sports and provided feedback on sticking with the physiotherapy and rehab program" and they found this helpful. Another participant who relayed receiving less education from their sports medicine physician said that the sport medicine physician "could have talked to me more about what I should do to prevent re-injury." Another noted that being educated specifically about what activities could be done after surgery with a brace was helpful. Overall almost all participants noted appreciating being well educated on what they were experiencing and what to expect from their injury, rehabilitation and return to play or wishing that they had had more education in these areas from their health care professionals at some point in their responses in the questionnaire.

The second theme which emerged from the present data was the importance of the atmosphere in the rehabilitation setting. This theme was divided into four sub-themes: questions, time, being positive, and social support. With regard to questions, participants indicated that they liked to feel free to ask questions, but also that they wanted their

health care professionals to ask them specific questions about how the injury was impacting them psychologically.

With respect to being able to ask questions, participants valued an "open environment" in their rehabilitation setting, which included feeling as though they could comfortably engage in dialogue about their injury with health care professionals. A number of participants indicated not feeling welcome to ask questions of their health care professionals. Participants wanted their health care professionals to take "more time to address [their] questions". One participant, in particular, said that it would have been helpful if "he (i.e., sports medicine physician) actually had a conversation with me. He simply told me the diagnosis and what to do or not to do and left. He seemed frustrated with me when I even asked or questioned him." Other participants reported being happy with the "open" and "honest" relationships they had with their health care professionals; specifically, feeling free to ask questions. One participant noted they appreciated the "open dialogue" they felt they had with their physiotherapist. While others noted that their health care professional was easy to talk to about their injury and rehabilitation.

In addition to wanting to feel free to ask questions of their health care professionals, participants indicated that they wanted their health care professionals to ask them direct questions about how they were dealing with the injury emotionally and/or psychologically. One participant said she thought her physiotherapist did a good job of addressing the psychological aspect of her injury, however, she also noted that "it is always beneficial to ask direct questions about how a person is feeling." Another participant said she found it helpful that her health care professionally initiated daily discussions of her "pain level/emotional state".

In terms of time, participants noted a difference in the amount of time they spent with their physiotherapist and athletic therapists as compared to their physicians. Results indicated that when participants spent more time with a health care professional, they tended to also report feeling a closer and more open relationship with that person. This was well described by one participant who said of her physiotherapist:

> I believe because of the increased amount of time we spent together during and pre-surgery and post-surgery rehabilitation periods, they were able to ask more questions and have more of an open dialogue with me about my injury. In comparison to the surgeon who only spent a short period of time with me during each visit; he was obviously more concerned with my physical progress and asked far less questions in relation to my emotions regarding the injury.

Another participant said that the athletic therapist "took on the role of being the psychological supporter because I saw her on a daily basis." Also, with this increased time, participants said that they felt their athletic therapist and physiotherapist took a "vested interest" in them and their injury and that they felt "important". One said she felt like her athletic therapist "cared about me and my injury more so than the doctor or my orthopaedic surgeon." While another said of her physiotherapist that "we spent more time together than the surgeon and I did, so we had more time to discuss how I was feeling emotionally about the surgery. Just having the time to talk was beneficial." Participants attributed this lack of time with their physician to the fact that they were very "busy" and did not have enough "time to spend with each patient."

The third sub-theme that emerged from the present data, in terms of atmosphere in the rehabilitation setting, was the importance of a positive atmosphere. It was important to the participants that their health care professionals remained positive because:

> The mental aspect of an injury can be just as debilitating as the injury itself. It's very easy to lose your confidence and start to believe you will never get better- they need to keep you on track both physically and emotionally.

The words 'positive', 'hopeful', and 'reassuring' were used frequently in describing health care professionals who participants felt were addressing the psychological aspect of their injury well. Participants valued health care professionals who had a "positive outlook" on rehabilitation, as one participant put it in describing what she found most helpful about her orthopaedic surgeon. Another participant described her athletic therapist as "always very positive in terms of recovery." This was echoed in another participant's reflection on the care they received from a chiropractor who "stay[ed] very positive regarding the rehab process." Being positive, one participant said "made me feel comfortable that I would get better and that I would be able to compete again at the same level." When asked what made a health care professional superior in addressing the psychological aspect of injury or providing overall care participants often reported things like being "very positive", "giving hope", and "encouragement."

The final sub-theme which emerged from the present data in terms of atmosphere in the rehabilitation setting was that participants appreciated a rehabilitation setting where they felt a great deal of support. One participant noted that they appreciated that the athletic therapist "set me up with a support system of other athletes to get more encouragement." Another participant saw an athletic therapist as "the psychological supporter" while another

appreciated that her athletic therapist "chatt[ed] when I needed someone to talk to understanding what I was going through."

To summarize the qualitative results as they relate to the aforementioned research questions, participants noted a number of things health care professionals could do which would be helpful in addressing the psychological aspect of athletic injury. Participants said they wanted their health care professionals to educate them on the injury, rehabilitation, and return-to-play process. They also said that they appreciated an open and inviting atmosphere in their rehabilitation setting wherein they feel free to ask questions of their health care professional. Participants also said that they wanted their health care professional to ask more specific questions about how they were dealing with the injury from an emotional or psychological stand point. Participants appreciated having more time with their health care professionals in order to feel important, foster a relationship, and to have their questions addressed. Finally, participants indicated how important it was to them that the atmosphere in the rehabilitation setting be positive and that they feel supported in their recovery process.

Discussion

The purpose of the present study was to better understand the relationship between injured athletes and their health care professionals during the rehabilitation process. The researcher looked at how injured athletes perceive the adequacy of different health care professionals in addressing the psychological aspect of their injury. The researcher examined what injured athletes liked and did not like in terms how their health care professionals addressed the psychological aspect of their injury, as well as how they thought the psychological aspect of injury could best be addressed by health care professionals. This investigation involved both quantitative and qualitative analyses. This

section will discuss the results in relation to past research, implications of the findings, limitations of the present study, and recommendations for future research.

Participants and Health Care Professionals

Twenty-three injured athletes participated in the present study. These participants had been recruited from various physiotherapy clinics (both university-based and privately owned) across Canada. Participants were surveyed about their experiences with the various health care professionals with whom they consulted during their rehabilitation process. Generally speaking, participants represented a fairly homogeneous group of young (M_{age} = 21.5 years) university students or alumni. The sample included a relatively equal distribution of males and females (10 and 13, respectively), and was almost exclusively competitive athletes (20 competitive versus 3 recreational).

Participant athletes in the present study reported seeing a variety of health care professionals during their rehabilitation process. Not surprisingly, all participants reported seeing at least one health care professional during their injury and rehabilitation. As previously stated participants saw athletic therapists and physiotherapists most frequently and chiropractors and massage therapists the least often with all physicians falling in the middle.

Somewhat surprisingly, all of the family physicians cited by participants in the present study were male. This is consistent, however, with the findings of the National Physician Survey conducted in 2007, which reported that there are considerably fewer female than male physicians in Canada. According to this survey, almost two-thirds (63%) of all physicians in Canada were male. The percentage of males was higher among specialists (72%), such as orthopaedic surgeons and sports medicine physicians (National Physician Survey, 2007). Based on the research, this relative lack of female physicians may

be cause for concern, especially for female athletes. For example, Drummond, Hostetterm Laguna, Gillentine, and Rossi, (2007) found that both male and female athletes have a preference for health care professionals of the same sex. Additionally, it was found that the preference for a same-sex health care professional was especially strong when addressing intimate issues and psychological concerns. This is particularly important with relation to the present study because it is the psychological component of athletic injury which is being addressed.

As compared to family physicians, the sex distribution among physiotherapists and athletic therapists in the present study was more even. The increased number of females is somewhat consistent with the findings of the Canadian Institute of Health Information Workplace Trends Report (2008) which indicated that females comprise 78% of Canadian physiotherapists. Other research (see Tracey, 2008) has found that physiotherapists and athletic therapists better address the psychological aspect of injury with their patients, in part because they tend to spend more time with individual patients than do physicians. This was also evident in the qualitative data in the present study which also indicated that participants thought athletic therapists and physiotherapists addressed the psychological aspect of athletic injury better than physicians and one reported reason for this is the factor of time.

Addressing the psychological aspect of injury-whose job is it?

The first research question of the present study was whether athletes thought it was important for health care professionals to address the psychological aspect of injury. The psychological aspect of injury encompasses the emotional response to injury (e.g., fear, frustration, anger) and how this response affects the rehabilitation process (e.g., motivation,

adherence, belief in recovery), as well as the physical and psychosocial outcomes (e.g., return-to-play outcome, functional ability, perceived success/abilities).

All participants in this study reported at least some degree of psychological distress throughout their injury and rehabilitation. This is consistent with the findings of previous research (Jevon & Johnston, 2003; Johnston & Carroll, 1998; McDonald and Hardy, 1990; Tracey, 2003; Wiese-Bjornstal et al., 1998). The psychological aspect of injury appears to be an important component of the injury and rehabilitation process and, therefore, in need of addressing by health care professionals. Despite the recognized importance of the psychological component, none of the participants in the present study had seen or been referred to a mental health care professional (i.e., psychologist, sport psychologist, or sport psychology consultant) regarding issues related to their current injury. Interestingly, other research has found that despite being aware of the psychological component of athletic injury, health care professionals rarely suggest that an athlete see a mental health care professional (Hemmings & Povey, 2002; Mann et al., 2007). There are a number of possible reasons why this might be the case. Firstly, this may be because health care professionals do not think there are adequate numbers of mental health care professionals available and qualified to specifically address the psychological aspect of injury with athletes (Mann et al., 2007). Secondly, athletes, health care professionals, parents, and coaches may not be well informed of the role mental health care professionals can play in addressing the psychological aspect of injury. Thirdly, given the almost exclusive focus on the physical recovery from injury and the general lack of knowledge of the connection between the physical and mental aspects of injury, the psychological aspect may be seen as being less important.

Ninety-four percent of participants in the present study responded that they thought it was important for health care professionals to address the psychological aspect of injury. This was considerably higher than the number of participants (48%) who indicated that they thought it would have been helpful to see a mental health care professional during their rehabilitation. This seems to be consistent with previous literature. For example, Washington-Lofgren et al. (2008) found that injured athletes thought their athletic therapists were qualified to deal with the negative emotions associated with injury and they saw it as part of their athletic therapist's job to address the psychological aspect of recovery as part of the rehabilitation process. This piece of information is important because it continued to be unclear whose responsibility it is to address the psychological aspect of injury with injured athletes. This will be addressed later in the discussion, suffice it to say, however, injured athletes seem to prefer that the psychological aspect of their injuries be addressed by their health care professionals.

Health care professionals addressing the psychological aspect of injury

The second research question of the present study investigated what injured athletes perceived their health care professionals to have done in addressing the psychological aspect of their injury. Participants reported that the psychological aspect of their injury most commonly addressed by their health care professionals was the fear of re-injury. Mann et al. (2007) reported that over 92% of physicians reported 'sometimes' or 'often' discussing fear of re-injury with their injured athletes. However, in the responses to this questionnaire participants reported their health care professionals addressing this psychological aspect of injury 'sometimes' of 'often' between 66.7% and 91.7% of the time. The difference between respondent perspective (injured athlete versus physician) is consistent with other research (e.g., Cegala, Gade, Broz, & McClure, 2004), which has

found that physicians and patients often perceive aspects of medical interviews differently. This discrepancy in reporting would be a good target for future research. However, despite this discrepancy in frequency of health care professionals addressing fear of re-injury from the prospective of the health care professionals and the injured athletes, it was, in both studies the most commonly discussed psychological component of injury.

Although the perspective of injured athletes appears to vary from that of physicians, the findings of both studies attest to the importance of athletes' fear of re-injury. Fear of re-injury has been found to be a debilitating factor in athletes trying to turn to play. In Kvist et al.'s (2005) study the authors found that of those athletes who did not return to play, 24% reported that the reason why was because of their fear of re-injury. By contrast, those athletes who did return to play had significantly less fear of re-injury. Further research is required to see how to best address the fear of re-injury in order to prevent it from being a limiting factor for injured athletes returning to play. Helping injured athletes to successfully return to play is important. Having a career-ending athletic injury can be an extremely difficult adjustment for an athlete. Indeed, athletes may experience distress for years after the injury. According to Kleiber and Brock (1992), athletes who end their athletic careers because of injury report a lower quality of life in the five to ten years following retirement as compared to athletes who did not sustain a career-ending injury.

The least commonly discussed psychological aspect of injury, as indicated by the participants in the present study, was concerns about weight loss or gain and use of painkillers following the injury. These psychological aspects of injury were also reported by physicians in Mann et al.'s (2007) study as being rarely discussed. However, that does not mean they are not an important component of the psychological aspect of injury. For example, Tracey (2003) found that athletes fear a loss of fitness, including weight gain or

loss depending on their sport, during rehabilitation from the serious athletic injury (Tracey, 2003).

With regard to other findings of the present study, goal setting (both long- and short-term goals) emerged as what participants perceived to be the most commonly used skills by their health care professionals. This finding is consistent with previous research by Hemmings and Povey (2002), Arvnen-Barrow and colleagues (2007), and Arvin-Barrow et al. (2009) all of whom have reported that health care professionals identify goal setting as the most commonly used psychological skill in their practices.

The use of goal setting has been found to be important to athletes during rehabilitation from athletic injury. Ievleva and Orlick (1991) found that one of the indicators of athletes who recovered quicker from athletic injury was taking more personal responsibility for recovering from the injury, which included the use of goal setting. Wiese et al. (1987) found that one of the qualities athletic trainers reported as distinguishing between those athletes who were the most and least successful in coping with their injury was the use of goal setting. Wiese and Weiss (1987) also found goal-setting to be one of the key motivational techniques with injured athletes. These researchers suggested that goal setting allows athletes to have a greater sense of control over their injury. More recently, Niven (2007) found that one of the factors that influenced poor adherence to a rehabilitation program for athletes was not having goals.

The consensus of opinion seems to be that goal-setting has a positive influence on athletes' recovery from injury. Therefore, the fact that athletes report that their health care professionals are initiating the use of long- and short-term goal setting so commonly should be beneficial to athletes' well-being, both physical and mental. Nonetheless, a substantial proportion of injured athletes (38-48%) indicated that they had not been

encouraged to set goals. It is possible that participants were not able to identify the use of goal setting within their rehabilitation or it may be that health care professionals are not using goal setting as much as they could be in treating injured athletes. Given the importance of this skill to the well-being and recovery of athletes, health care professionals should be encouraged to view it as an important target of treatment.

The psychological skills that participants reported being used least often by their health care professionals were imagery and relaxation skills. It is not surprising that these skills are used less often than goal setting, for instance. Whereas goal setting is a well understood practice that people use in everyday life, both imagery and relaxation techniques would require special training in order to implement them in a rehabilitation plan for injured athletes (Arvinen-Barrow et al., 2009). Indeed, many health care professionals report a lack of understating about imagery and relaxation techniques. Arvinen-Barraw and colleagues (2009) found that only physiotherapists with a psychology background reported a comfortable knowledge and understanding of imagery. Physiotherapists, without a psychology background however, were unclear about what imagery involved. To put this in perspective, only 5.2% of physiotherapists in Canada enter a physiotherapy program with a psychology degree (CIHI, 2008) and physiotherapy programs tend to provide little to no training on psychological skills. Physiotherapists also have reported a lack of understanding of relaxation techniques. In Arvinen-Barrow et al.'s (2009) study, physiotherapists reported examples of relaxation techniques as including the use of acupuncture, massage, and Pilates, as well as resting. Although all these techniques can be considered relaxing, they are not specifically relaxation techniques. Formal relaxation techniques can include such approaches as progressive muscle relaxation and autogenic relaxation. All share the intended effect of allowing the injured athlete to gain

more control over their muscles by learning how to release muscle tension and thus promote relaxation (Shaffer & Wiese-Bjornstal, 1999).

The lack of health care professionals' use and understanding of these psychological skills, however, does not make them any less useful to injured athletes. Like goal setting, both imagery and relaxation techniques have been found to be important to the physical and psychological well-being of injured athletes. The use of imagery has been found to be an indicator of athletes who will recover faster from their injury (Ievleva & Orlick, 1991), and has been found to be a key motivational technique (Wiese & Weiss, 1987). Relaxation techniques can be used to reduce stress and anxiety associated with the injury which may serve to reduce pain (Wiese & Weiss, 1987; Tripp, Stanish, Coady, & Reardon, 2002). Cupal and Brewer (2001) found that those athletes who used imagery and relaxation techniques in their recovery from ACL injuries, had significantly higher knee strength scores than athletes in the control or placebo groups. Moreover, the athletes who used imagery and relaxation techniques had significantly reduced levels of fear of re-injury and pain.

Since both imagery and relaxation techniques have been found to be so beneficial to injured athletes' recovery, it is unfortunate that they seem to be used so infrequently. Perhaps, this is not surprising given health care professionals' lack of education about the psychological aspect of injury, the considerable demands on their time, and the fact that it is not even clear which health care professional is supposed to be the source of psychological skills. What is clear, however, is the need for education. First, health care professionals require education about the importance of the psychological component of injury; education about basic skills such as goal setting, relaxation, imagery; and education about when to refer the athlete to a mental health care professional. Athletes, too, require

education. Some of this education could come in a didactic form from their health care professional, including a mental health care professional. Some of this education could come in the form of readings and educational material designed specifically for the injured athlete. This is also a time when mental health care professionals could be helpful in implementing psychological interventions and skills which may be out of the scope of practice for health care professionals. Well-designed research studies could test the relative efficacy and effectiveness of providing education to athletes in different ways.

When participants were asked about their experiences with health care professionals and how these professionals addressed the psychological aspect of injury, athletic therapists and physiotherapists emerged as doing the best job overall. This result may not be too surprising considering the time-intensive nature of the relationship between these health care professionals as compared to physicians. Athletic therapists and physiotherapists typically spend much more time per session with the athletes they are treating and they tend to see them on a more regular basis. This factor of time spent with health care professionals and the discussion of the psychological aspect of injury has been found in various studies, including this one, as being important. Time is one of the key elements in health care professionals developing rapport with the athletes they treat (Tracey, 2008). Based on the increased time athletic therapists and physiotherapists spend with their athletic patients and thus the increased opportunity for them to develop a better rapport and closer relationship, it seems logical that they would do a better job of addressing the psychological aspect of injury than other health care professionals. Because of increased time spent and closer relationship with the athletes, they may feel more comfortable in addressing the psychological aspect of injury and able to identify psychological aspects of injury that would be better addressed by a mental health care

practitioner than other health care professionals. It should be noted that the lack of data on athletes' experiences with massage therapists and chiropractors makes it difficult to compare these professionals' performance with that of physiotherapists and athletic therapists.

As mentioned before, Mann and colleagues (2007) found that physicians perceived themselves to be addressing the psychological aspect of injury more than would be suggested by the reports of the participant athletes in the present study. On the other hand, Mann et al. (2007) found that "sports medicine physicians discuss psychological issues with their injured athletes fairly frequently" (p. 2145). By contrast, the results of the present study indicate that participants perceived their sports medicine physicians as rarely addressing the psychological aspect of injury. There are a number of possible explanations for this finding. First, the present study was based on the perception of the injured athlete versus the physician. It may be that the athletes did not remember the sports medicine physician discussing this with them or, perhaps, they did not perceive the discussion as pertaining to the psychological aspect of their injury. Also, it is more likely that more time elapsed since the participant saw their sports medicine physician as compared to their athletic therapist or physiotherapist so they may simply have forgotten what has been discussed. It could also be a function of power given the small sample size in the present study.

Despite the indication that sports medicine physicians rarely addressed specific psychological aspects of their injury with the athletes in the present study, 63% of participants reported being 'somewhat' or 'very satisfied' with the psychological care they received from their sports medicine physician. Although, this was the second lowest percentage of the five most commonly seen health care professionals, it still means that

over half of the participants who saw this type of specialist were at least somewhat satisfied with the psychological care they received. This suggests that there may have been some other component of the care provided that made so many participants feel satisfied which may not have been specifically addressed in this study.

There may be other factors that can account for why athletic therapists and physiotherapists may have addressed the psychological aspect of injury more often than physicians. All the physicians in the present study were male, however, there was a more even gender split among the athletic therapists and physiotherapists. It is possible that the sex of the health care professional plays a role in patient satisfaction with care. Previous research has reported a preference by injured athletes for treatment by same-sex health care professionals. Moreover, research shows that male athletes' preference for female health care professionals increases when it comes to psychological concerns (Drummond et al., 2007). This suggests that female health care professionals may be better at addressing the psychological aspect of injury than their male counterparts. Finding that male and female health care professionals seem to utilize psychological skills at a comparable rate, suggests that focusing on athletes' acquisition of psychological skills (vs. discussion of feelings) may be more within the comfort zone for male health care professionals.

Education and Atmosphere

The open ended or qualitative questions to which participants responded to in this study provided the data for answering the final two research questions. These questions were related to what athletes found most helpful that their health care professionals did to address the psychological aspect of injury as well as what they would like their health care professionals to do to better address the psychological aspect of injury. The data from these questions fell into two main themes: education and atmosphere.

The theme of education has previously been found by other researchers to be an important role of health care professionals in treating injured athletes. Tracey (2008) found that health care professionals also identify education as a key role in treating injured athletes. Participants repeatedly noted that they thought it was important for the health care professionals whom they saw during their rehabilitation to provide them with more education about their injury, rehabilitation, and return to play. Bianco (2001) also found that one of the needs that athletes had in terms of social support following injury was informational support. From physicians, for example, athletes reported requiring an accurate diagnosis and specific information including recovery time and changes of returning to sport. This is consistent with what participants in the present study reported wanting from their physicians. From physiotherapists, Bianco (2001) reported that injured athletes wanted feedback, advice, acknowledgement of effort, and to be pushed harder. Again, participants in the present study reported wanting more education in terms of diagnosis, recovery time and information about return to play. This could also be related to the feedback and advice which participants in Bianco's (2001) study desired from their health care professionals as well.

The education that participants in the present study wanted from their health care professionals seemed to relate closely to some of the concerns they had about their injury, rehabilitation and return to play, and specifically fear of re-injury. This is contrary to the findings of Wiese et al. (1987) who reported that athletic trainers saw understanding the mechanism of the injury to be one of the psychological strategies least important to with the treatment of injured athletes. Participants in the present study, however, indicated a desire to have a full understanding of all aspects of the injury, including why and how it happened.

The second theme to emerge, with respect to what injured athletes found most helpful or wanted their health care professionals to do to address the psychological aspect of injury, was the atmosphere provided in the rehabilitation environment. The importance of atmosphere in the rehabilitation setting fits with the findings of previous research, such as Heany (2006) and Niven (2007). According to Heany (2006), athletic therapists should create an environment which encourages rehabilitation through the use of psychological skills. Although participants in the present study did not indicate that the use of specific psychological skills was important in their rehabilitation, they did indicate that there were things their health care professional could do to encourage their psychological well-being as well as physical healing. Consequently, from the overarching theme of atmosphere emerged four sub themes: being open to questions, providing time, being positive, and extending social support.

Participants in the present study indicated that they wanted their health care professionals to provide an open environment in their rehabilitation setting. Part of this included feeling able to ask questions as well as having the health care professional ask them direct questions about how they were coping with their injury. The feeling of being able to ask questions of their health care professional is closely tied to the first theme of wanting to acquire as much information as possible about the injury. Tracey (2008) found that health care professionals indicate that they see one of their roles as being a communicator and one aspect of this was being a good listener. In Tracey's study, health care professionals felt that taking time to talk to clients and to listen to them talk about their injury, the prognosis and treatment, and their fears can help injured athletes to be more confident as well as more motivated about their rehabilitation. Both of these factors, confidence and motivation, are essential for a successful recovery from injury.

Being a good listener, however, is only one component of the communication desired by the participants. With regard to the physical aspect of their injury, participants in the present study indicated wanting to be the ones who asked the questions or initiated. When it came to the psychological component of the injury, however, participants wanted the health care professionals to be the ones who asked the questions. This may be because there is a sigma associated with mental illness or distress (Rusch, Angermeyer, & Corrigan, 2005) and by having health care professionals broach the subject it may lessen this stigma and help to normalize what they athlete is feeling. This is contrary to what Mann et al. (2007) reported in regards to injured athletes broaching the subject of a poor psychological response to injury with their health care professionals. Mann et al. (2007) indicated that injured athletes trust their health care professionals enough to initiate a conversation about responses to major injuries with them. Despite the fact that based on the data it would be unlikely an injured athlete would initiate a conversation about the psychological component of their injury with their health care professionals; trust may not be the limiting factor in initiating this conversation. Rather than a lack of trust it may be a lack of understanding or embarrassment of the psychological response they are experiencing or an inability to know how to explain what they are feeling. Additionally, injured athletes may think that what they are experiencing is abnormal. Because of this uncertainty on the part of the injured athletes as to what they are experiencing it is important that this subject is initiated by the health care professional, even if it is only to provide outside educational resources or referrals, because it seems unlikely that it would be the injured athlete who initiates this conversation.

With respect to what may limit a health care professional in addressing the psychological aspect of injury, one factor may be time. As previously discussed, injured

athletes see the time spent with their health care professional as being important to the rapport they develop. The fact that participants saw their physiotherapists and athletic therapists as best addressing the psychological component of injury seems to make sense as they are the people who injury athletes would spend the most cumulative time with during their rehabilitation. One participant noted she had had over 100 appointments with her physiotherapist during her rehabilitation. This amount of time with someone clearly allows more opportunities for a strong rapport to be developed. Increased time spent together would allow participants to feel they are more important to their health care professional and that the health care professional has more of a vested interest in them making a successful recovery.

Another aspect of the rehabilitation environment that injured athletes seemed to find important was having their health care professionals be positive. Wiese et al. (1987) found that athletic trainers thought positive reinforcement for athletes was one of the nine most important psychological strategies that athletic trainers could use. Health care professionals adopting a positive stance towards the athlete and the injury can be important in the athlete's appraisal of the injury. Researchers have found that an athlete's attitude and feelings towards their injury can be completely determined by how their health care professional seems to appraise the injury. These feelings can extend well beyond the time of the appointment (Johnston & Carroll, 1998).

Finally, social support was indicated by athletes as being a important component of the role they see their health care professionals playing in addressing the psychological component of the injury. Athletes indicated a desire for social support in the form of the health care professional acting as a source of social support as well as the health care professional helping facilitate relationships for them with other injured athletes to be

sources of social support for each other. The importance of social support to the injured athletes in the present study is consistent with Bianco (2001) who found that injured athletes saw health care professionals as one of their sources of social support during their rehabilitation. Some even indicated that their physiotherapist was their key source of social support during their rehabilitation.

Niven (2006) found that those athletes, who had more social support and good relationships with their health care professionals, were more adherent to their rehabilitation program. Given that social support has been linked to both motivation and adherence, it would seem to be an important target of treatment with injured athletes. Having athletes adhere to their rehabilitation program and remain motivated to practice in rehabilitation activities so as to make a successful return to play is beneficial to athletes both physically and psychologically. Adherence to a rehabilitation program has been positively linked to rehabilitation outcome (Brewer, 2010). More specifically, athletes who were more (vs. less) adherent to their rehabilitation program, had fewer physical symptoms associated with their knee six months post-operatively (Brewer, et al., 2004). Participating in rehabilitation allows athletes to interact with others who have suffered an injury and are undergoing rehabilitation, which can facilitate their recovery. Wiese and Weiss (1987) found that social support groups improve injured athletes' motivation during rehabilitation.

Limitations

The findings of the present study must be considered in light of a number of limitations. First, the sample size of the study was quite small. Recruitment may have suffered because logistics precluded the primary investigator being in direct contact with the participants. The small sample size limits the ability to generalize the results to a larger population. Given the small sample size and the fact that participants reported on the health

care professionals seen during their present rehabilitation process, some health care professionals (e.g., massage therapists and chiropractors) were significantly underrepresented in the data.

The present study also was limited by particular elements of the research design. For example, it may have been more beneficial in getting a true perception of how participants felt about how health care professionals addressed the psychological aspect of their injury, if certain questions (e.g., items 3 and 4 in each health care professionals section) had been worded 'not frequently enough', 'frequently enough' and 'too frequently' versus 'never', 'rarely', 'sometimes' and 'often' because the latter are so open to interpretation. Since injured athletes may each want something different from their health care professionals in terms of addressing the psychological aspect of injury, it may have been more beneficial to know how the way their health care professional addressed the psychological aspect of injury worked or did not work for the participants.

Another limitation involves the primary measure, the ASMSP-Q. Firstly, the ASMSP-Q has not been tested on measures of validity or reliability. Therefore, it may not be measuring what it is intended to and it may not test consistently each time it is used. Additionally, although all participants in the present study had university experience, there may have been various degrees of understanding when it came to some of the items in the questionnaire. For instance, question 3 in the final questions section "what was it that this health care professional did to attend to the psychological aspect of you injury" may have been interpreted different ways by different participants despite the fact there was a qualitative follow up question. This may have also been true for some other items in the questionnaire, therefore potentially making the responses less accurate to the true experience of the participants. This could have been improved by having more examples

and definitions throughout. On the other hand, doing this may have lead participants to answer a certain way or increases the length of the questionnaire and decreases the number of participants who completed the whole questionnaire. Therefore, despite the fact this in some ways limits this study; the limitations it presents were determined to be acceptable as compared to leading the participants.

The length and repetitive nature of the questionnaire may have also presented a limitation to this study. Not all participants completed all questions in the questionnaire. This may have been due to its length, especially if they had seen a number of different health care professionals. Having only some participants complete the questionnaire increases the potential for response bias in that only participants who had a certain experience with their health care professionals (perhaps either positive or negative) may have completed the whole questionnaire. This would have skewed the data in a particular direction. Future research would benefit by considering a modification of the questionnaire to reduce participant burden and possible response bias.

Despite its limitations, the present study is the first to investigate injured athletes' perception of their health care professionals. Although small in size, the sample yielded rich data. Close examination of participant responses furthers our understanding of the relationship between injured athletes and health care professionals. The findings of this study serve to generate many ideas and directions for future research. Ultimately, it is hoped that the present study can serve to improve the experiences of both injured athletes and health care professionals.

Future Directions

Future research in the area of sport-related injury would benefit by considering the psychological aspect of injury from the perspective of the patient-athlete. In particular,

research is needed to look at how to best integrate the use of physical health care professionals with mental health care professionals. Replication of the present study with a larger and more varied sample could help elucidate how health care professionals are addressing the psychological aspect of injury with their patient-athletes. In addition, future research could examine what injured athletes find most helpful in alleviating their psychological concerns related to injury.

The results of the present study suggest some important implications. Firstly, little research has examined the differences between how males and females with respect to responses to athletic injury. Further investigation could determine if male and female injured athletes have different psychological needs and goals in terms of what they want from their health care professionals. It also would seem to be important to determine whether male and female health care professionals differ in their approach to the psychological aspect of injury with athletes. It is possible that an interaction may exist between the sex of the health care professional and sex of the injured athlete. Unfortunately, the small sample size of the present study did not allow this type of analysis.

Further research in this area requires the development of a reliable and valid measurement tool which health care professionals could administer to injured athletes in order to assess their degree of psychological distress. For example, having a scale such as the Linton Activity Screening Questionnaire (Linton & Halldén, 1998) which is commonly used with chronic pain patients, would allow health care professionals to identify injured athletes who are at risk for negative psychological (e.g., pain-related anxiety, depression) and physical outcomes of their injury (e.g., slow or incomplete recovery) and set them up with appropriate psychological services in a timely fashion.

As with all areas of health, education is the key to making sure injured athletes' needs are being fully met - both physically and psychologically. Health care professionals need to be better educated in the psychological aspect of injury and how they can best address it with injured athletes. Health care professionals need to be educated about the role of a psychologist, sport psychologist, or sport psychology consultant in addressing the psychological aspect of injury with athletes. Injured athletes also need to be empowered with education on the psychological aspect of athletic injury. Education would provide them with a better idea of what to expect of rehabilitation, their role in the rehabilitation process, and the potential value of consultation with a mental health care professional. In the United States, interventions with athletic training students have been found to be effective in enhancing athletic trainers ability to address the psychological aspect of injury (Stiller-Ostrowski, Gould, Covassin, 2009; Stiller-Ostrowski, & Ostrowski, 2009). More research is required to test the effectiveness of education in terms of lessening the psychological distress of injured athletes, increasing return to play success, and decreasing recovery time. Having the psychological aspect of injury better addressed should be helpful for all parties. For injured athletes, education should reduce the level of psychological distress and improve rehabilitation. For health care professionals, education should facilitate their success in improving physical outcomes for the athletes they treat. Education also might help health care professionals deal more effectively with injured athletes who are lacking motivation or commitment to a rehabilitation program. For example, employing techniques which is commonly used by mental health care practitioners, could help reduce frustration and enhance their success.

Conclusions

The results from this study can be used to make recommendations for the role of health care professionals addressing the psychological aspect of injury with the injured athletes they treat. It is clear from the responses provided by participants in this study that addressing the psychological aspect of injury is important. All participants in this study reported at least some level of psychological distress following their injury. However, it is still unclear where the responsibility lies for addressing the psychological aspect of injury with injured athletes. Injured athletes seemed to prefer to be able to discuss the psychological aspect of injury with health care professionals rather than be referred to see a mental health care professional. In some respects health care professionals are in the ideal situation to address the psychological aspect of injury with the athletes they treat (Kolt & McEvoy, 2003). They often spend a great deal of time with injured athletes and because of this tend to develop a good rapport and trusting relationship. They also involve practices with involve the use of touch which again with can facilitate a close relationship. Additionally, from a practical stand point they are all ready seeing the injured athlete thus integrating a discussion of the psychological aspect of injury may seem like the logical thing. Yet, previous research has shown conflicting results as to the level of both comfort and competence of health care professionals have in addressing the psychological aspect of injury.

It has been widely found that health care professionals receive little formal education on addressing the psychological aspect of injury (Arvnen-Barrow et al., 2007) and because of this health care professionals report varied levels of comfort when addressing the psychological aspect of injury with their patients (Arvnen-Barrow et al. 2007; Mann et al., 2007). However, there has been an increase in the amount of training

athletic therapists in the United States receive in addressing the psychological aspect of injury. There are 12 content areas in which athletic trainers must display for educational and clinical competence in, one of which is "psychological intervention and referral" (Stiller-Ostrowski, & Ostowski, 2009, p. 67). After studying the level of education that recently certified athletic therapists received in their undergraduate training it was found that athletic therapists had learned little about "counselling and social support, mental skills training, and psychosocial referral" (p.74). Athletic therapists who were enrolled in a 6-week Applied Sport Psychology for Athletic Trainers educational intervention were found to increase their knowledge of the psychological component of athletic injury as well as increasing their skill usage (Stiller-Ostrowski, Gould, & Covassin, 2009). Education programs for health care professionals should focus on efficient and manageable ways to address and monitor the psychological aspect of injury. Health care professionals are already extremely busy and time constraints may be seen as a limiting factor in addressing the psychological aspect of injury. Having an educational program focus making the amount of time spend with athletes more quality time rather than more quantity of time this could make addressing the psychological aspect of injury less daunting. Programs such as the one discussed by Stiller-Ostrowski and colleagues (2009) would be extremely useful in training of all health care professionals especially considering the fact that injured athletes in this study reported more often wishing to discuss the psychological aspect of their injury with their health care professionals rather than with a mental health care professional. This may not always be possible nor may it always be the best way to have psychological aspects of injury addressed. However, having health care professionals have the knowledge and capabilities to effectively address the psychological aspect of injury with injured athletes as well as identify injured athletes who would benefit from a referral to a mental

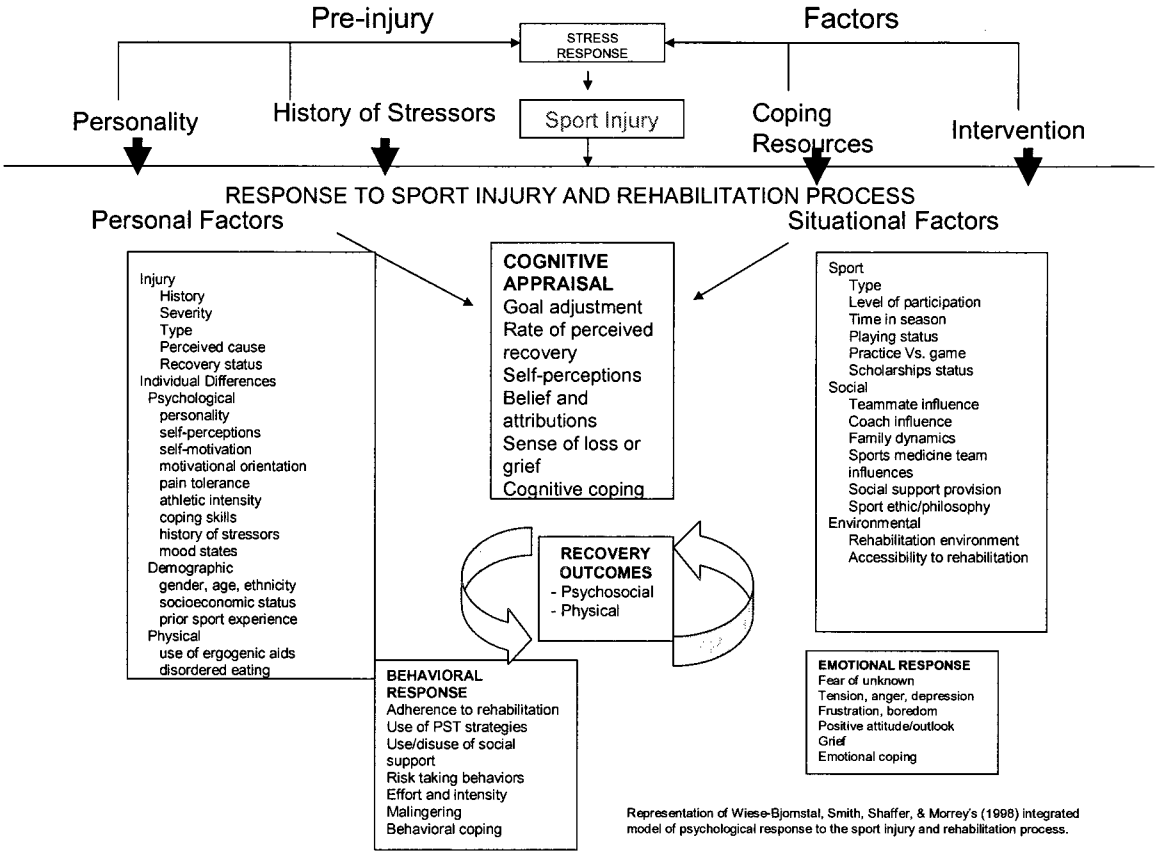
health care professional can be beneficial to both injured athletes and health care professionals. Yet, the responsibility for identifying athletes who are coping poorly with an athletic injury cannot fall solely on the health care professionals. Injured athletes need to also be educated, perhaps by a seminar or education materials provided by mental health care professionals, in order to be empowered in their own treatment. Specifically, injured athletes need to have the knowledge and abilities to be able to voice concerns about the psychological aspect of injury and advocate for the psychological aspect of injury to be better addressed, perhaps by a mental health care professional.

It is clear from this study that injured athletes do not always perceive all components of the psychological aspect of athletic injury as being discussed with them by their health care professionals. Yet, overwhelmingly injured athletes reported thinking it was helpful for health care professionals to address this in their care. Some common concerns for injured athletes such as fear of re-injury were more commonly discussed by health care professionals, which is logical since a concern such as this would be well within their scope of practice and comfort. To try and elevate these types of concerns health are professionals can use physiological explanations and rehabilitation plans in order to have athletes better understand how to have some control over there bodies and prevent these types of problems from occurring. Other concerns, however, are more psychologically based. Things such as anxiety or depression which can be concerns for injured athletes are infrequently discussed by health care professionals most likely because it is well outside of their scope of practice, just as taping and ankle or reducing a dislocated shoulder would be well outside the scope of practice for a psychologist. However, should a psychologist be seeing a patient who was complaining of shoulder pain a logical recommendation would be to see a health care professional who specializes in orthopaedic

injuries. Therefore if an athletic therapist, for instance, is seeing a patient who seems to be exhibiting symptoms of depression a recommendation may be to see a psychologist to have this addressed. Additionally, such psychological skills such as goal setting are easily implemented by health care professionals as compared to such things as relaxation skills and imagery which require some specific training. Therefore an effort to educate health care professional on what they can do to make the experience with athletic injury less problematic for injured athletes such as providing them with education and a comfortable rehabilitation atmosphere and the use of goal setting is very important. Additionally education on identifying injured athletes who may benefit from the assistance of a mental health care professional would be very beneficial. Ultimately, a collaborative effort between all health care professionals, including mental health care professionals, would help to ensure the best possible outcome for all injured athletes.

Appendix A

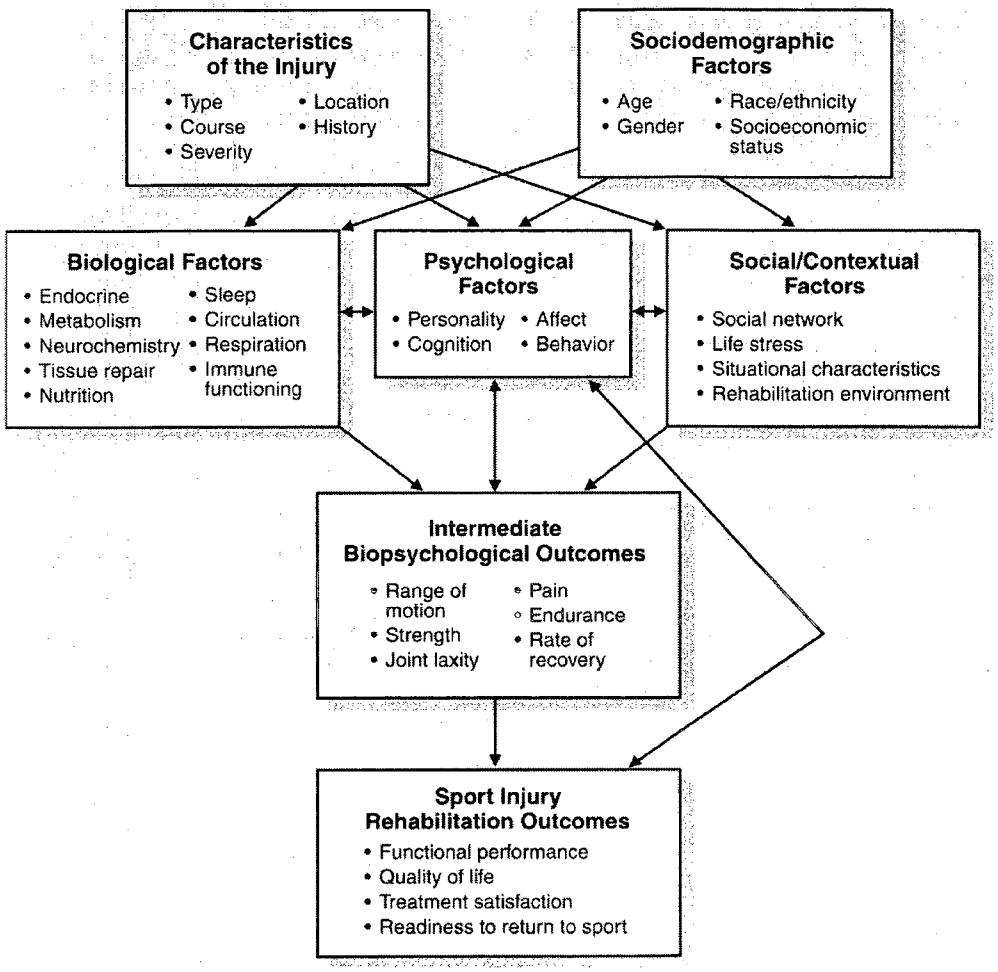
Integrated Model of psychological response to the sport injury and rehabilitation process (Wiese-Bjornstal et al., 1998)



Representation of Wiese-Bjornstal, Smith, Shaffer, & Morrey's (1998) integrated model of psychological response to the sport injury and rehabilitation process.

Appendix B

Biopsychosocial Model of the psychological response to sport injury (Brewer et al., 2002)



Appendix C

Health Care Professional Information Letter

Dear Health Care Professional,

My name is Hayley Russell and I am a student in the Masters of Science in Kinesiology program at Wilfrid Laurier University in Waterloo, Ontario. For my Master's thesis, I am conducting a research project which will examine the psychological response to injury and rehabilitation, in particular, the relationship between injured athletes and the health care professionals who treat them throughout their rehabilitation. I am working under the supervision of Dr. Jill Tracey and have ethics approval from the Research Ethics Board of Wilfrid Laurier University for this project.

In order to recruit participants for this study, I am approaching a number of health care professionals to see if I can recruit from their clinics. Since it is important for me to have as many clinics and injured athletes involved as possible, I have done my best to simplify the involvement of health care clinics. All that would be required of you, or someone in your clinic, would be to identify individuals who are undergoing or starting treatment/ rehabilitation at your clinic and meet the following criteria:

1. Over 18
2. Sustained an injury during physical activity of any kind (i.e. competitive sport, recreational sport, leisure physical activity, etc.)
3. May be out of any participation in physical activity (i.e. play, practice, working out, etc.) for at least 7 consecutive days because of this injury

You would then provide these individuals with an information package about my study. If they consent to participate in this study they would then provide their contact information at the end of the informed consent form which would be mailed in an addressed stamped envelope to me in your regular clinic mail or by the individual themselves.

No information provided by the participants will be able to identify the clinic or health care professionals who treated this individual. The information provided will be combined with participants from a variety of health care clinics and other organizations to gain a greater understanding of the relationship between health care professionals and injured athletes.

I understand you have a very busy schedule and many other important things to attend to in your clinic, so I would greatly appreciate your involvement in this study. If there is anything I can do to make your involvement in this study easier, or if you have any other questions, please do not hesitate to contact me at the email address or phone number provided below. Additionally, if you do wish to help me in my data collection for this study, please email or telephone me and I will send you all the information you will require.

With sincere thanks,

Hayley Russell
MSc. Candidate
Wilfrid Laurier University
Phone: 519-844-1070 ext. 2518
Email: russ0631@wlu.ca

Dr. Jill Tracey
Department of Kinesiology
Wilfrid Laurier University
Phone: 519-884-1070 ext. 4216
Email: jtracey@wlu.ca

Appendix D

Informed Consent

INFORMED CONSENT
WILFRID LAURIER UNIVERSITY

You are invited to participate in a research study. As part of the thesis requirement for completion of a Master's of Science degree at Wilfrid Laurier, Hayley Russell, a graduate student in the Department of Kinesiology and Physical Education, and Dr. Jill Tracey, an assistant professor in the Department of Kinesiology and Physical Education are completing a research study The purpose of this study is to learn more about to gain a better understanding of the relationship between health care professionals and injured athletes as well as the needs of injured athletes. Ultimately, the information gained in this study may serve to help health care professionals better address the psychological aspect of athletic injury thus improving the quality of life and rehabilitation outcome for injured athletes. This study is not an evaluation of your health care professionals, nor are there any right or wrong answers. Just answer the questions as honestly as you can.

INFORMATION

Your participation in this study is strictly voluntary. You may refuse to complete the questionnaire or you may withdraw from the questionnaire at anytime if you have chosen to participate.

Your questionnaire may be completed online; however, it may also be completed in hard copy upon your request. The questionnaire should take approximately 15 to 20 minutes to complete. If for any reason you are uncomfortable with a question you do not have to respond. You may also withdraw from the study at any time without penalty. Additionally, your health care professionals will not be aware of your participation in this study and therefore your decision to participate or not will have no effect on your rehabilitation.

RISKS AND BENEFITS

This project will add to the body of research in this area of sports injury psychology and rehabilitation. The only foreseeable risks to you as a participant would be potential boredom during completion of the questionnaire additionally; there may be some experience of discomfort or sadness while recalling events associated with your injury.

Also, because you may choose to complete the questionnaire online there is a risk of loss of privacy because of internet security. Although all possible measures will be taken to insure internet security (using a secure network and deleting questionnaires as soon as they are printed) this risk continues to exist.

CONFIDENTALITY

All foreseeable efforts will be made to insure your confidentially during the data collection, publication and presentation of the data. The information you provide during the interview will be accessible only to Dr. Jill Tracey and Hayley Russell. It is expected that there will be approximately 50 participants and most data will be presented as a group rather than individually. Some of the written answers, however, may be used as quotes in publications or presentations.

_____

Initials

Your name or identifying information will not be used in these quotes. You may also indicate at

the bottom of this form whether you agree to have quotes from your questionnaire used in publications or presentations of this research. If you indicate 'no', no direct quotes will be used from your questionnaire. Additionally, your name will not be used in any publication or presentation of this research instead pseudonyms will be used. Also, none of your health care professionals will know whether you have participated in this study or the information you have provided unless you choose to discuss it with them. To insure the confidentiality of your health care professionals please only identify them by profession in your answers rather than by name (i.e. family physician NOT Dr. MacDonald). Your questionnaires will be retained for 5 years in a locked office at Wilfrid Laurier University accessible only to Dr. Jill Tracey and Hayley Russell.

COMPENSATION

You will receive no compensation for your participation in this study.

CONTACT

If you have any questions at any time about this study of the procedures (or you have experienced adverse effects as a result of participating in this study) you may contact either of the co-researchers, Dr. Jill Tracey at Wilfrid Laurier University at 519-884-0710 extension 4216 or Hayley Russell at Wilfrid Laurier University at (519)575-8675. This project has been reviewed and approved by the University Research Ethics Board. If you

feel you have not been treated according to the description in this form, or you rights as a participant in research have been violated during the course of this project you may contact Dr. Robert Basso, Chair, University Research Ethics Board, Wilfrid Laurier University, (519) 884-1970, extension 5225 or rbasso@wlu.ca.

FEEDBACK AND PUBLICATION

The information from this research project will be submitted for publication in various sports psychology and sport rehabilitation journals as well as presented at relevant conferences.

CONSENT

I have read and understand the above information. I have received a copy of this form. I agree to participate in this study.

Participant's signature_____ Date_____

Investigator's signature_____ Date _____

Please indicate by checking yes or no as to whether you will allow direct quotes (Which will NOT include your name) from your interview to be used in the publication or presentation of this data.

Yes_____ No_____

If you agree to be contacted to participate in this research study please provide your email address for online survey **or** your mailing address for hardcopy survey.

_____

_____

Email Address

Appendix E

Questionnaire

Thank you for agreeing to complete these questionnaires. Please do not indicate your name or the names of any of your health care professionals while answering any of the questions.

Demographic Questionnaire

1. Today's date:_____

2. What is your current age?:_____

3. Sex:_____

4. What is your occupation?:_____

5. What was the date of your injury?:_____

6. When did you return to play following your injury, or if you have not returned to play when you EXPECT to return to play? (Does not have to be an exact date)

:_____

7. What sport/exercise or activity were you doing when the injury occurred (eg. soccer, basketball, running etc.?

8. What other physica activities do you participate in

regularly?:_____

9. Describe at what level you participate in sport (or participated before your injury) (i.e. varsity, competitive, non-competitive, recreational, adult recreational of competitive league, etc.)?_____

10. Description of injury (i.e. injured body part and/or diagnosis):

_____

_____

11. What was the mechanism of the injury? (i.e. brief description or how the injury occurred, specifically whether it was contact or non-contact):_____

_____

12. Please list any surgeries, casts, braces, or medication you received because of your injury.

_____

_____

Adapted Sports Medicine Sports Psychology Questionnaire (ASMSP-Q)

Please complete the follow questionnaire to the best of your ability. Please note that you will not be completing all sections of the questionnaire only one which specifically apply to your injury experience. Please read the questionnaires carefully to know which sections are appropriate for you to complete. Thank you!

1. Please click the number that best represents how often you experience the following from the onset of your injury until the end of your rehabilitation or today is you have not finished rehabilitation. (1=never, 2=rarely, 3=sometimes, 4=often)

	0	1	2	3
Anger				
Frustration				
Fear				
Sadness				
Confusion				
Loss of identity				
Worry				
Shock				
Helplessness				
Anxiety				
Depression				
Jealousy				
Regret				
Apathy				
Exercise withdrawal				
Boredom				

2. Please click the number which best represents how often you experienced the following from the onset of our injury until the end of your rehabilitation or today is you have not finished your rehabilitation. (1=never, 2=rarely, 3=sometimes, 4=often)

	0	1	2	3
Lack of motivation				
Trouble sleeping				
Trouble adhering to the rehabilitation program				
Trying to return to sport against medical advice				
Recovering slower than you expected				
Recovering slower than your health care professionals expected				
Fear that prevents you from completing rehabilitation tasks				
Depression				
Disbelief that you will ever fully recover				

3. Approximately how many times have you met with each of you health care professionals during your treatment for THIS injury.

Health Care Professional	#
Family Physician	
Orthopaedic Surgeon	
Sports Medicine Physician	
Other Physician_____	
Physiotherapist	
Athletic Therapist	
Massage Therapist	
Chiropractor	
Other _____	

4. Did you see a mental health care professional, such as a clinical psychologist or sports psychology consultant, during the course of the injury and rehabilitation process, specifically related to your injury?

Yes

No

5. If it had been available, do you think seeing a mental health care professional, such as a clinical psychologist or sport psychology consultant, would have been beneficial to your during your rehabilitation? Why or why not?

Yes

No

Family Physician

Did you meet with a **family physician** throughout your injury and rehabilitation process?

Yes

No

1. What sex was the **family physician** who you saw?

Male

Female

2. Estimate the age of the **family physician** you saw?

Under 30

30-50

Over 50

3. Please indicate how often the **family physician** you saw discussed the following issues with you during your rehabilitation. (1=never, 2=rarely, 3=sometimes, 4=often)

	0	1	2	3
Fears about surgery				
Fears of re-injury				
Avoidance of rehabilitation of sports-related activities				
Feelings of hopelessness about recovery or getting better				
Concerns and self-doubt about not being able to perform at same level after injury/surgery				
Emotions (e.g. Anger, sadness, loss of identity)associated with the injury				
Emotions about potential long-term effects of injury, re-injury, continued participation in sports				
Depression associated with injury				
Frustration associated with injury				
Concerns about weight loss or gain following the injury				
Feeling isolated or alone after injury				
Dealing with stress related to injury and rehabilitation				
Difficulties emotionally letting go of the injury events				
Anxiety related to pain				
Difficulty emotionally dealing with pain				
Dependence on pain killers				
Unwillingness to be patients with recovery/rehabilitation-refusal to take things slowly				
Denial of seriousness of injury or consequences of injury				
Inability to motivate self to engage in rehabilitation tasks				
Concerns that the consequences of the injury such as missing games or diminished performance will disappoint others (e.g., parents coaches, teammates)				

4. Please indicate how often your **family physician** helped you to use the following skills. (1=never, 2=rarely, 3=sometimes, 4=often)

	1	2	3	4
Short term goals setting				
Long term goal getting				
Imagery				
Positive self-talk				
Social support with other injured athletes				
Relaxation Skills				

5. Did your **family physician** ever offer to refer you to see a psychologist, sport psychologist, sports psychology consultant, or other mental health professional during your rehabilitation?

Yes- please specify_____

No

6. How satisfied were you with the physical care you received from your **family physician** during the injury and rehabilitation process? (4=Very satisfied 3=Somewhat satisfied 2=Somewhat unsatisfied 1=Very unsatisfied)

1 2 3 4

7. How satisfied were you with how your **family physician** dealt with the psychological aspect of your injury? (4=Very satisfied 3= Somewhat satisfied 2= Somewhat unsatisfied 1=Very unsatisfied)

1 2 3 4

8. Is there anything your **family physician** could have done to improve how he or she addressed with psychological aspect of your injury during the injury and rehabilitation process?

9. Is there anything your **family physician** did that was particularly helpful in terms of the psychological aspect of your injury?

Orthopaedic Surgeon

Did you meet with an **orthopaedic surgeon** during your injury and rehabilitation process?

Yes

No

1. What sex was the **orthopaedic surgeon** you saw?

Male

Female

2. Estimate the age of the **orthopaedic surgeon** you saw?

Under 30

30-50

Over 50

3. Please indicate how often the **orthopaedic surgeon** you saw discussed the following issues with you during your rehabilitation. (1=never, 2=rarely, 3=sometimes, 4=often)

	0	1	2	3
Fears about surgery				
Fears of re-injury				
Avoidance of rehabilitation of sports-related activities				
Feelings of hopelessness about recovery or getting better				
Concerns and self-doubt about not being able to perform at same level after injury/surgery				
Emotions (e.g. Anger, sadness, loss of identity)associated with the injury				
Emotions about potential long-term effects of injury, re-injury, continued participation in sports				
Depression associated with injury				
Frustration associated with injury				
Concerns about weight loss or gain following the injury				
Feeling isolated or alone after injury				
Dealing with stress related to injury and rehabilitation				

Difficulties emotionally letting go of the injury events				
Anxiety related to pain				
Difficulty emotionally dealing with pain				
Dependence on pain killers				
Unwillingness to be patients with recovery/rehabilitation- refusal to take things slowly				
Denial of seriousness of injury or consequences of injury				
Inability to motivate self to engage in rehabilitation tasks				
Concerns that the consequences of the injury such as missing games or diminished performance will disappoint others (e.g., parents coaches, teammates)				

4. Please indicate how often your orthopaedic surgeon guided you to use the following skills. (1=never, 2=rarely, 3=sometimes, 4=often)

	0	1	2	3
Short term goals setting				
Long term goal getting				
Imagery				
Positive self-talk				
Social support with other injured athletes				
Relaxation Skills				

5. Did your **orthopaedic surgeon** ever offer to refer you to see a psychologist, sport psychologist, sports psychology consultant, or other mental health professional during your rehabilitation?

Yes- please specify_____

No

6. How satisfied were you with the physical care you received from your **orthopaedic surgeon** during the injury and rehabilitation process? (4=Very satisfied 3= Somewhat satisfied 2=Somewhat unsatisfied 1=Very unsatisfied)

1 2 3 4

7. How satisfied were you with how your **orthopaedic surgeon** dealt with the psychological aspect of your injury? (4=Very satisfied 3= Somewhat satisfied 2= Somewhat unsatisfied 1=Very unsatisfied)

1 2 3 4

8. Is there anything your **orthopaedic surgeon** could have done to improve how he or she addressed with psychological aspect of your injury during the injury and rehabilitation process?

9. Is there anything your **orthopaedic surgeon** do that was particularly helpful in terms of the psychological aspect of your injury?

Sports Medicine Physician

Did you meet with a **sports medicine physician** during your injury and rehabilitation process?

Yes

No

1. What sex was the **sports medicine physician** you saw?

Male

Female

2. Estimate the age of the **sports medicine physician** you saw?

Under 30

30-50

Over 50

3. Please indicate how often the **sports medicine physician** you saw discussed the following issues with you during your rehabilitation. (1=never, 2=rarely, 3=sometimes, 4=often)

	0	1	2	3
Fears about surgery				
Fears of re-injury				
Avoidance of rehabilitation of sports-related activities				
Feelings of hopelessness about recovery or getting better				

Concerns and self-doubt about not being able to perform at same level after injury/surgery				
Emotions (e.g. Anger, sadness, loss of identity)associated with the injury				
Emotions about potential long-term effects of injury, re-injury, continued participation in sports				
Depression associated with injury				
Frustration associated with injury				
Concerns about weight loss or gain following the injury				
Feeling isolated or alone after injury				
Dealing with stress related to injury and rehabilitation				
Difficulties emotionally letting go of the injury events				
Anxiety related to pain				
Difficulty emotionally dealing with pain				
Dependence on pain killers				
Unwillingness to be patients with recovery/rehabilitation-refusal to take things slowly				
Denial of seriousness of injury or consequences of injury				
Inability to motivate self to engage in rehabilitation tasks				
Concerns that the consequences of the injury such as missing games or diminished performance will disappoint others (e.g., parents coaches, teammates)				

4. Please indicate how often your **sports medicine physician** guided you to use the following skills. (1=never, 2=rarely, 3=sometimes, 4=often)

	0	**1**	**2**	**3**
Short term goals setting				
Long term goal getting				
Imagery				
Positive self-talk				
Social support with other injured athletes				
Relaxation Skills				

5 Did your **sports medicine physician** ever offer to refer you to see a psychologist, sport psychologist, sports psychology consultant, or other mental health professional during your rehabilitation?

Yes- please specify_____

No

6. How satisfied were you with the physical care you received from your **sports medicine physician** during the injury and rehabilitation process? (4=Very satisfied 3=Somewhat satisfied 2=Somewhat unsatisfied 1=Very unsatisfied)

1 2 3 4

7. How satisfied were you with how your **sports medicine physician** dealt with the psychological aspect of your injury? (4=Very satisfied 3= Somewhat satisfied 2= Somewhat unsatisfied 1=Very unsatisfied)

1 2 3 4

8. Is there anything your **sports medicine physician** could have done to improve how he or she addressed with psychological aspect of your injury during the injury and rehabilitation process?

9. Is there anything your **sports medicine physician** do that was particularly helpful in terms of the psychological aspect of your injury?

Other physician

Did you see any **other physicians** during your injury and rehabilitation process?

Yes- please specify (type of physician)_____

No-

1. What sex was this **other physician**?

Male

Female

2. Estimate the age of the **other physician** you saw?

Under 30

30-50

Over 50

3. Please indicate how often this **other physician** discussed the following issues with you during your rehabilitation process (1=never, 2=rarely, 3=sometimes, 4=often)

	0	1	2	3
Fears about surgery				
Fears of re-injury				
Avoidance of rehabilitation of sports-related activities				
Feelings of hopelessness about recovery or getting better				
Concerns and self-doubt about not being able to perform at same level after injury/surgery				
Emotions (e.g. Anger, sadness, loss of identity)associated with the injury				
Emotions about potential long-term effects of injury, re-injury, continued participation in sports				
Depression associated with injury				
Frustration associated with injury				
Concerns about weight loss or gain following the injury				
Feeling isolated or alone after injury				
Dealing with stress related to injury and rehabilitation				
Difficulties emotionally letting go of the injury events				
Anxiety related to pain				
Difficulty emotionally dealing with pain				
Dependence on pain killers				
Unwillingness to be patients with recovery/rehabilitation-refusal to take things slowly				
Denial of seriousness of injury or consequences of injury				
Inability to motivate self to engage in rehabilitation tasks				
Concerns that the consequences of the injury such as missing games or diminished performance will disappoint others (e.g., parents coaches, teammates)				

4. Please indicate how often your **other physician** guided you to use the following skills. (1=never, 2=rarely, 3=sometimes, 4=often)

	0	1	2	3
Short term goals setting				
Long term goal getting				
Imagery				
Positive self-talk				
Social support with other injured athletes				
Relaxation Skills				

5. Did your **other physician** ever offer to refer you to see a psychologist, sport psychologist, sports psychology consultant, or other mental health professional during your rehabilitation?

Yes- please specify_____

No

6. How satisfied were you with the physical care you received from your **other physician** during the injury and rehabilitation process? (4=Very satisfied 3=Somewhat satisfied 2=Somewhat unsatisfied 1=Very unsatisfied)

1 2 3 4

7. How satisfied were you with how your **other physician** dealt with the psychological aspect of your injury? (4=Very satisfied 3= Somewhat satisfied 2= Somewhat unsatisfied 1=Very unsatisfied)

1 2 3 4

8. Is there anything your **other physician** could have done to improve how he or she addressed with psychological aspect of your injury during the injury and rehabilitation process?

9. Is there anything your **other physician** do that was particularly helpful in terms of the psychological aspect of your injury?

Physiotherapist

Did you see a **physiotherapist** during your rehabilitation process?

Yes

No

1. What sex was the **physiotherapist** you saw?

Male

Female

2. Estimate the age of the **physiotherapist** you saw?

Under 30

30-50

Over 50

3. Please indicate how often your **physiotherapist** discussed with following with you during your injury and rehabilitation process. (1=never, 2=rarely, 3=sometimes, 4=often)

	0	1	2	3
Fears about surgery				
Fears of re-injury				
Avoidance of rehabilitation of sports-related activities				
Feelings of hopelessness about recovery or getting better				
Concerns and self-doubt about not being able to perform at same level after injury/surgery				
Emotions (e.g. Anger, sadness, loss of identity)associated with the injury				
Emotions about potential long-term effects of injury, re-injury, continued participation in sports				
Depression associated with injury				
Frustration associated with injury				
Concerns about weight loss or gain following the injury				
Feeling isolated or alone after injury				
Dealing with stress related to injury and rehabilitation				
Difficulties emotionally letting go of the injury events				
Anxiety related to pain				
Difficulty emotionally dealing with pain				
Dependence on pain killers				
Unwillingness to be patients with recovery/rehabilitation-refusal to take things slowly				
Denial of seriousness of injury or consequences of injury				
Inability to motivate self to engage in rehabilitation tasks				

Concerns that the consequences of the injury such as missing games or diminished performance will disappoint others (e.g., parents coaches, teammates)				

4. Please indicate how often your **physiotherapist** guided you to use the following skills. (1=never, 2=rarely, 3=sometimes, 4=often)

	0	1	2	3
Short term goals setting				
Long term goal getting				
Imagery				
Positive self-talk				
Social support with other injured athletes				
Relaxation Skills				

5. Did your **physiotherapist** ever offer to suggest you see a psychologist, sport psychologist, sports psychology consultant, or other mental health professional during your rehabilitation?

Yes- please specify_____

No

6. How satisfied were you with the physical care you received from your **physiotherapist** during the injury and rehabilitation process? (4=Very satisfied 3=Somewhat satisfied 2=Somewhat unsatisfied 1=Very unsatisfied)

1 2 3 4

7. How satisfied were you with how your **physiotherapist** dealt with the psychological aspect of your injury? (4=Very satisfied 3= Somewhat satisfied 2= Somewhat unsatisfied 1=Very unsatisfied)

1 2 3 4

8. Is there anything your **physiotherapist** could have done to improve how he or she addressed with psychological aspect of your injury during the injury and rehabilitation process?

9. Is there anything your **physiotherapist** do that was particularly helpful in terms of the psychological aspect of your injury?

Athletic Therapist

Did you see an **athletic therapist** during your injury and rehabilitation process?

Yes

No

1. What sex was the **athletic therapist** you saw?

Male

Female

2. Estimate the age of the **athletic therapist** you saw?

Under 30

30-50

Over 50

3. Please indicate how often the **athletic therapist** you saw during your injury and rehabilitation process discussed the following issues with you. (1=never, 2=rarely, 3=sometimes, 4=often)

	0	1	2	3
Fears about surgery				
Fears of re-injury				
Avoidance of rehabilitation of sports-related activities				
Feelings of hopelessness about recovery or getting better				
Concerns and self-doubt about not being able to perform at same level after injury/surgery				
Emotions (e.g. Anger, sadness, loss of identity)associated with the injury				
Emotions about potential long-term effects of injury, re-injury, continued participation in sports				
Depression associated with injury				
Frustration associated with injury				
Concerns about weight loss or gain following the injury				

Feeling isolated or alone after injury				
Dealing with stress related to injury and rehabilitation				
Difficulties emotionally letting go of the injury events				
Anxiety related to pain				
Difficulty emotionally dealing with pain				
Dependence on pain killers				
Unwillingness to be patients with recovery/rehabilitation- refusal to take things slowly				
Denial of seriousness of injury or consequences of injury				
Inability to motivate self to engage in rehabilitation tasks				
Concerns that the consequences of the injury such as missing games or diminished performance will disappoint others (e.g., parents coaches, teammates)				

4. Please indicate how often your **athletic therapist** guided you to use the following skills. (1=never, 2=rarely, 3=sometimes, 4=often)

	0	1	2	3
Short term goals setting				
Long term goal getting				
Imagery				
Positive self-talk				
Social support with other injured athletes				
Relaxation Skills				

5. Did your **athletic therapist** ever suggest you see a psychologist, sport psychologist, sports psychology consultant, or other mental health professional during your rehabilitation?

Yes- please specify_____

No

6. How satisfied were you with the physical care you received from your **athletic therapist** during the injury and rehabilitation process? (4=Very satisfied 3=Somewhat satisfied 2=Somewhat unsatisfied 1=Very unsatisfied)

1 2 3 4

7. How satisfied were you with how your **athletic therapist** dealt with the psychological aspect of your injury? (4=Very satisfied 3= Somewhat satisfied 2= Somewhat unsatisfied 1=Very unsatisfied)

1 2 3 4

8. Is there anything your **athletic therapist** could have done to improve how he or she addressed with psychological aspect of your injury during the injury and rehabilitation process?

9. Is there anything your **athletic therapist** did that was particularly helpful in terms of the psychological aspect of your injury?

Massage Therapist

Did you see a **massage therapist** during your injury and rehabilitation process?

Yes

No

1. What sex was the **massage therapist** you saw?

Male

Female

2. Estimate the age of the **massage therapist** you saw?

Under 30

30-50

Over 50

3. Please indicate how often your **massage therapist** discussed the following issues with you during the injury and rehabilitation process. (1=never, 2=rarely, 3=sometimes, 4=often)

	0	1	2	3
Fears about surgery				
Fears of re-injury				
Avoidance of rehabilitation of sports-related activities				
Feelings of hopelessness about recovery or getting better				
Concerns and self-doubt about not being able to perform at same level after injury/surgery				

Emotions (e.g. Anger, sadness, loss of identity)associated with the injury				
Emotions about potential long-term effects of injury, re-injury, continued participation in sports				
Depression associated with injury				
Frustration associated with injury				
Concerns about weight loss or gain following the injury				
Feeling isolated or alone after injury				
Dealing with stress related to injury and rehabilitation				
Difficulties emotionally letting go of the injury events				
Anxiety related to pain				
Difficulty emotionally dealing with pain				
Dependence on pain killers				
Unwillingness to be patients with recovery/rehabilitation- refusal to take things slowly				
Denial of seriousness of injury or consequences of injury				
Inability to motivate self to engage in rehabilitation tasks				
Concerns that the consequences of the injury such as missing games or diminished performance will disappoint others (e.g., parents coaches, teammates)				

4. Please indicate how often your **massage therapist** guided you to use the following skills. (1=never, 2=rarely, 3=sometimes, 4=often)

	0	**1**	**2**	**3**
Short term goals setting				
Long term goal getting				
Imagery				
Positive self-talk				
Social support with other injured athletes				
Relaxation Skills				

5. Did your **massage therapist** ever suggest you see a psychologist, sport psychologist, sports psychology consultant, or other mental health professional during your rehabilitation?

Yes- please specify_____

No

6. How satisfied were you with the physical care you received from your **massage therapist** during the injury and rehabilitation process? (4=Very satisfied 3=Somewhat satisfied 2=Somewhat unsatisfied 1=Very unsatisfied)

1 2 3 4

7. How satisfied were you with how your **massage therapist** dealt with the psychological aspect of your injury? (4=Very satisfied 3= Somewhat satisfied 2= Somewhat unsatisfied 1=Very unsatisfied)

1 2 3 4

8. Is there anything your **massage therapist** could have done to improve how he or she addressed with psychological aspect of your injury during the injury and rehabilitation process?

9. Is there anything your **massage therapist** do that was particularly helpful in terms of the psychological aspect of your injury?

Chiropractor

Did you see a **chiropractor** during your injury and rehabilitation process?

Yes (please move to 14b)

No (please move to question 15)

1. What sex was the **chiropractor** you saw?

Male

Female

2. Estimate the age of the **chiropractor** you saw?

Under 30

30-50

Over 50

3. Please indicate how often your **chiropractor** discussed the following issues with your during your injury and rehabilitation process. (1=never, 2=rarely, 3=sometimes, 4=often)

	0	1	2	3
Fears about surgery				
Fears of re-injury				
Avoidance of rehabilitation of sports-related activities				
Feelings of hopelessness about recovery or getting better				
Concerns and self-doubt about not being able to perform at same level after injury/surgery				
Emotions (e.g. Anger, sadness, loss of identity)associated with the injury				
Emotions about potential long-term effects of injury, re-injury, continued participation in sports				
Depression associated with injury				
Frustration associated with injury				
Concerns about weight loss or gain following the injury				
Feeling isolated or alone after injury				
Dealing with stress related to injury and rehabilitation				
Difficulties emotionally letting go of the injury events				
Anxiety related to pain				
Difficulty emotionally dealing with pain				
Dependence on pain killers				
Unwillingness to be patients with recovery/rehabilitation- refusal to take things slowly				
Denial of seriousness of injury or consequences of injury				
Inability to motivate self to engage in rehabilitation tasks				
Concerns that the consequences of the injury such as missing games or diminished performance will disappoint others (e.g., parents coaches, teammates)				

4. Please indicate how often your **chiropractor** guided you to use the following skills.

	0	1	2	3
Short term goals setting				
Long term goal getting				
Imagery				
Positive self-talk				
Social support with other injured athletes				
Relaxation Skills				

5. Did your **chiropractor** ever offer to refer you to see a psychologist, sport psychologist, sports psychology consultant, or other mental health professional during your rehabilitation?

Yes- please specify_____

No

6. How satisfied were you with the physical care you received from your **chiropractor** during the injury and rehabilitation process? (4=Very satisfied 3= Somewhat satisfied 2=Somewhat unsatisfied 1=Very unsatisfied)

1 2 3 4

7. How satisfied were you with how your **chiropractor** dealt with the psychological aspect of your injury? (4=Very satisfied 3= Somewhat satisfied 2= Somewhat unsatisfied 1=Very unsatisfied)

1 2 3 4

8. Is there anything your **chiropractor** could have done to improve how he or she addressed with psychological aspect of your injury during the injury and rehabilitation process?

9. Is there anything your **chiropractor** did that was particularly helpful in terms of the psychological aspect of your injury?

Other health care professional

Did you see any **other health care professionals** during your injury and rehabilitation process?

Yes-please specify(what type)_____

No

1. What sex was the other **health care professional** you saw?

Male

Female

2. Estimate the age of the **chiropractor** you saw?

Under 30

30-50

Over 50

3. Please indicate how often this other **health care professional** discussed the following issues with your during your injury and rehabilitation process. (1=never, 2=rarely, 3=sometimes, 4=often)

	0	1	2	3
Fears about surgery				
Fears of re-injury				
Avoidance of rehabilitation of sports-related activities				
Feelings of hopelessness about recovery or getting better				
Concerns and self-doubt about not being able to perform at same level after injury/surgery				
Emotions (e.g. Anger, sadness, loss of identity)associated with the injury				
Emotions about potential long-term effects of injury, re-injury, continued participation in sports				
Depression associated with injury				
Frustration associated with injury				
Concerns about weight loss or gain following the injury				
Feeling isolated or alone after injury				
Dealing with stress related to injury and rehabilitation				
Difficulties emotionally letting go of the injury events				
Anxiety related to pain				

Difficulty emotionally dealing with pain				
Dependence on pain killers				
Unwillingness to be patients with recovery/rehabilitation-refusal to take things slowly				
Denial of seriousness of injury or consequences of injury				
Inability to motivate self to engage in rehabilitation tasks				
Concerns that the consequences of the injury such as missing games or diminished performance will disappoint others (e.g., parents coaches, teammates)				

4. Please indicate how often your other health care professional guided you to use the following skills. (1=never, 2=rarely, 3=sometimes, 4=often)

	0	1	2	3
Short term goals setting				
Long term goal getting				
Imagery				
Positive self-talk				
Social support with other injured athletes				
Relaxation Skills				

5. Did your **other health care professional** ever offer to refer you to see a psychologist, sport psychologist, sports psychology consultant, or other mental health professional during your rehabilitation?

Yes- please specify_____

No

6. How satisfied were you with the physical care you received from your **other health care professional** during the injury and rehabilitation process? (4=Very satisfied 3= Somewhat satisfied 2=Somewhat unsatisfied 1=Very unsatisfied)

1 2 3 4

7. How satisfied were you with how your **other health care professional** dealt with the psychological aspect of your injury? (4=Very satisfied 3= Somewhat satisfied 2= Somewhat unsatisfied 1=Very unsatisfied)

1 2 3 4

8. Is there anything your **other health care professional** could have done to improve how he or she addressed with psychological aspect of your injury during the injury and rehabilitation process?

9. Is there anything your other health care professional did that was particularly helpful in terms of the psychological aspect of your injury?

Finale Questions

15. Of all the health care professionals you saw who attended most to the psychological aspect of your injury?

16. What was it that this health care professional did to attend to the psychological aspect of your injury?

17. Do you think it is helpful to have health care professionals address both the physical and psychological aspect of injury?

Yes

No

18. Why or why not?

19. Which health care professional provided you with the most satisfactory physical care for your injury?

20. Which health care professional provided you with the most satisfactory overall (physical and psychological) care for you injury?

Appendix F

Perception of frequency of family physicians addressing psychological aspect of injury (n=7)

	Never %	Rarely %	Sometimes %	Often %
Fears about surgery	71.4	14.3	14.3	0
Fears of re-injury	28.6	14.3	57.1	0
Avoidance of sport-specific rehabilitation activity	57.1	28.6	28.6	0
Concerns and self-doubt about not being able to perform at the same level after the injury/surgery	42.9	28.6	0	14.3
Emotions associated with the injury	57.1	14.3	28.6	14.3
Emotions about potential long-term effects of injury, re-injury, continued participation in sport	57.1	14.3	14.3	14.3
Depression associated with injury	42.9	28.6	28.6	0
Frustration associated with injury	42.9	0	28.6	28.6
Concerns about weight loss or gain following the injury	57.1	42.9	0	0
Feeling isolated or alone after the injury	71.4	0	28.6	0
Dealing with stress related to the injury and rehabilitation	42.9	0	57.1	0
Difficulties emotionally letting go of the injury events	57.1	14.3	28.6	0
Anxiety related to pain	42.9	28.6	0	14.3
Difficulty emotionally dealing with pain	42.9	42.9	14.3	0
Dependence of pain killers	71.4	14.3	14.3	0
Unwillingness to be patient with the recovery/rehabilitation- refusal to take things slow	57.1	28.6	0	14.3
Denial of the seriousness of the injury or consequences of injury	42.9	28.6	28.6	0
Inability to motivate self to engage in rehabilitation tasks	71.4	14.3	14.3	0
Concerns that the consequences of the injury will disappoint others	28.6	0	57.1	14.3

Appendix G

Perception of frequency family physicians using psychological skills (n=7)

	Never	Rarely	Sometimes	Often
Setting short term goals	42.9	28.6	28.6	0
Setting long term goals	42.9	28.6	0	28.6
Imagery	71.4	14.3	14.3	0
Positive self-talk	57.1	14.3	28.6	0
Social support with other injured athletes	42.9	28.6	28.6	0
Relaxation skills	57.1	14.3	28.6	0

Appendix H

Perception of frequency of orthopaedic surgeon addressing psychological aspect of injury (n=6)

	Never %	Rarely %	Sometimes %	Often %
Fears about surgery	0	16.7	66.7	16.7
Fears of re-injury	16.7	50	33.3	0
Avoidance of sport-specific rehabilitation activity	16.7	33.3	33.3	16.7
Concerns about not being able to perform at the same level after the injury/surgery	16.7	16.7	50	16.7
Emotions (anger, sadness, loss of identity) associated with the injury	66.7	0	33.3	0
Emotions about potential long-term effects of injury, re-injury, continued participation	33.3	16.7	33.3	16.7
Depression associated with injury	66.7	16.7	16.7	0
Frustration associated with injury	50	16.7	33.3	0
Concerns about weight loss or gain following the injury	83.3	0	16.7	0
Feeling isolated or alone after the injury	66.7	16.7	16.7	0
Dealing with stress related to the injury and rehabilitation	33.3	16.7	33.3	0
Difficulties emotionally letting go of the injury events	66.7	16.7	16.7	0
Anxiety related to pain	33.3	33.3	33.3	0
Difficulty emotionally dealing with pain	66.7	16.7	16.7	0
Dependence of pain killers	83.3	0	16.7	0
Unwillingness to be patient with the recovery/rehabilitation- refusal to take things slow	66.7	16.7	16.7	0
Denial of the seriousness of the injury or consequences of injury	50	16.7	33.3	0
Inability to motivate self to engage in rehabilitation tasks	83.3	0	16.7	0
Concerns that the consequences of the injury will disappoint others	66.7	0	16.7	16.7

Appendix I

Perceptions of orthopaedic surgeons using psychological skills (n=6)

	Never	Rarely	Sometimes	Often
Setting short term goals	16.7	0	50	33.3
Setting long term goals	33.3	0	16.7	50
Imagery	83.3	16.7	0	0
Positive self-talk	66.7	16.7	16.7	0
Social support with other injured athletes	83.3	16.7	0	0
Relaxation skills	66.7	33.3	0	0

Appendix J

Perception of frequency of sports medicine physicians addressing psychological aspect of injury (n=9)

	Never	Rarely	Sometimes	Often
Fears about surgery	44.4	11.1	44.4	0
Fears of re-injury	11.1	22.2	66.7	0
Avoidance of sport-specific rehabilitation activity	37.5	37.5	25	0
Concerns and self-doubt about not being able to perform at the same level after the injury/surgery	55.5	11.1	33.3	0
Emotions (anger, sadness, loss of identity) associated with the injury	77.8	11.1	11.1	0
Emotions about potential long-term effects of injury, re-injury, continued participation in sport	55.6	22.2	22.2	0
Depression associated with injury	87.5	0	12.5	0
Frustration associated with injury	37.5	50	12.5	0
Concerns about weight loss or gain following the injury	87.5	12.5	0	0
Feeling isolated or alone after the injury	87.5	12.5	0	0
Dealing with stress related to the injury and rehabilitation	87.5	12.5	0	0
Difficulties emotionally letting go of the injury events	87.5	12.5	0	0
Anxiety related to pain	75	25	0	0
Difficulty emotionally dealing with pain	87.5	12.5	0	0
Dependence of pain killers	87.5	12.5	0	0
Unwillingness to be patient with the recovery/rehabilitation- refusal to take things slow	62.5	25	12.5	0
Denial of the seriousness of the injury or consequences of injury	62.5	25	12.5	0
Inability to motivate self to engage in rehabilitation tasks	75	12.5	12.5	0
Concerns that the consequences of the injury will disappoint others	37.5	50	12.5	0

Appendix K

Perception of frequency of sports medicine physicians using psychological skills (n=8)

	Never	Rarely	Sometimes	Often
Setting short term goals	37.5	25	37.5	0
Setting long term goals	37.5	37.5	12.5	12.5
Imagery	100	0	0	0
Positive self-talk	87.5	12.5	0	0
Social support with other injured athletes	87.5	12.5	0	0
Relaxation skills	87.5	12.5	0	0

Appendix L

Perception of frequency of other physicians addressing psychological aspect of injury (n=9)

	Never %	Rarely %	Sometimes %	Often %
Fears about surgery	50	50	0	0
Fears of re-injury	100	0	0	0
Avoidance of sport-specific rehabilitation activity	0	50	0	50
Concerns about not being able to perform at the same level after the injury/surgery	0	50	50	0
Emotions (anger, sadness, loss of identity) associated with the injury	50	0	50	0
Emotions about potential long-term effects of injury, re-injury, continued participation in sport	0	50	50	0
Depression associated with injury	50	0	0	50
Frustration associated with injury	50	50	0	0
Concerns about weight loss or gain following the injury	50	0	0	50
Feeling isolated or alone after the injury	50	50	0	0
Dealing with stress related to the injury and rehabilitation	50	0	50	0
Difficulties emotionally letting go of the injury events	50	50	0	0
Anxiety related to pain	50	0	50	0
Difficulty emotionally dealing with pain	50	0	50	0
Dependence of pain killers	50	50	0	0
Unwillingness to be patient with the recovery/rehabilitation- refusal to take things slow	50	50	0	0
Denial of the seriousness of the injury or consequences of injury	50	0	50	0
Inability to motivate self to engage in rehabilitation tasks	50	50	0	0
Concerns that the consequences of the injury will disappoint others	50	50	0	0

Appendix M

Perception of frequency of other physicians using psychological skills (n=2)

	Never	Rarely	Sometimes	Often
Setting short term goals	50	0	50	0
Setting long term goals	50	0	50	0
Imagery	50	0	50	0
Positive self-talk	50	50	0	0
Social support with other injured athletes	100	0	0	0
Relaxation skills	100	0	0	0

Appendix N

Perception of frequency of physiotherapists addressing psychological aspect of injury (n=12)

	Never %	Rarely %	Sometimes %	Often %
Fears about surgery	66.7	8.3	25	8.3
Fears of re-injury	8.3	8.3	75	16.7
Avoidance of sport-specific rehabilitation activity	16.7	25	41.7	25
Concerns and self-doubt about not being able to perform at the same level after the injury/surgery	30.8	16.7	30.8	25
Emotions (anger, sadness, loss of identity) associated with the injury	30.8	50	16.7	8.3
Emotions about potential long-term effects of injury, re-injury, continued participation in sport	30.8	25	41.7	8.3
Depression associated with injury	50	41.7	8.3	8.3
Frustration associated with injury	41.7	8.3	50	8.3
Concerns about weight loss or gain following the injury	10	16.7	0	8.3
Feeling isolated or alone after the injury	75	25	0	8.3
Dealing with stress related to the injury and rehabilitation	75	16.7	8.3	8.3
Difficulties emotionally letting go of the injury events	75	25	0	8.3
Anxiety related to pain	66.7	25	8.3	8.3
Difficulty emotionally dealing with pain	75	16.7	8.3	8.3
Dependence of pain killers	83.3	16.7	0	8.3
Unwillingness to be patient with the recovery/rehabilitation- refusal to take things slow	41.7	16.7	41.7	8.3
Denial of the seriousness of the injury or consequences of injury	75	16.7	25	8.3
Inability to motivate self to engage in rehabilitation tasks	58.3	25	16.7	8.3
Concerns that the consequences of the injury will disappoint others	66.7	8.3	16.7	8.3

Appendix O

Perceptions of frequency of physiotherapists using psychological skills (n=12)

	Never %	Rarely %	Sometimes %	Often %
Setting short term goals	16.7	16.7	16.7	50
Setting long term goals	25	16.7	8.3	50
Imagery	58.3	16.7	8.3	8.3
Positive self-talk	58.3	8.3	8.3	25
Social support with other injured athletes	50	25	16.7	8.3
Relaxation skills	66.7	16.7	8.3	8.3

Appendix P

Perception of frequency of athletic therapists addressing psychological aspect of injury (n=13)

	Never %	Rarely %	Sometimes %	Often %
Fears about surgery	53.8	7.7	7.7	7.7
Fears of re-injury	15.4	0	38.5	30.8
Avoidance of sport-specific rehabilitation activity	38.5	15.4	15.4	30.8
Concerns and self-doubt about not being able to perform at the same level after the injury/surgery	23.1	30.8	30.8	15.4
Emotions (anger, sadness, loss of identity) associated with the injury	15.4	15.4	38.5	30.8
Emotions about potential long-term effects of injury, re-injury, continued participation in sport	30.8	7.7	30.8	30.8
Depression associated with injury	38.5	15.4	30.8	15.4
Frustration associated with injury	15.4	30.8	15.4	46.2
Concerns about weight loss or gain following the injury	61.5	30.8	7.7	0
Feeling isolated or alone after the injury	53.8	15.4	30.8	0
Dealing with stress related to the injury and rehabilitation	38.5	23.1	23.1	15.4
Difficulties emotionally letting go of the injury events	46.2	30.8	23.1	0
Anxiety related to pain	30.8	30.8	38.5	0
Difficulty emotionally dealing with pain	53.8	23.1	0	15.4
Dependence of pain killers	76.9	7.7	7.7	7.7
Unwillingness to be patient with the recovery/rehabilitation- refusal to take things slow	30.8	38.5	23.1	7.7
Denial of the seriousness of the injury or consequences of injury	46.2	15.4	30.8	15.4
Inability to motivate self to engage in rehabilitation tasks	46.2	38.5	15.4	0
Concerns that the consequences of the injury will disappoint others	46.2	23.1	23.1	15.4

Appendix Q

Perceptions of frequency of athletic therapists' use of psychological skills (n=13)

	Never %	Rarely %	Sometimes %	Often %
Setting short term goals	15.4	0	30.8	53.8
Setting long term goals	15.4	15.4	30.8	46.2
Imagery	53.8	30.8	15.4	7.7
Positive self-talk	46.2	23.1	15.4	15.4
Social support with other injured athletes	38.5	30.8	7.7	23.1
Relaxation skills	92.3	0	7.7	0

Appendix R

Perception of frequency of massage therapists addressing psychological aspect of injury (n=3)

	Never %	Rarely %	Sometimes %	Often %
Fears about surgery	66.7	33.3	0	0
Fears of re-injury	33.3	33.3	33.3	0
Avoidance of sport-specific rehabilitation activity	66.7	0	33.3	0
Concerns and self-doubt about not being able to perform at the same level after the injury/surgery	66.7	0	0	33.3
Emotions (anger, sadness, loss of identity) associated with the injury	66.7	33.3	0	0
Emotions about potential long-term effects of injury, re-injury, continued participation in sport	66.7	33.3	0	0
Depression associated with injury	66.7	33.3	0	0
Frustration associated with injury	66.7	33.3	0	0
Concerns about weight loss or gain following the injury	66.7	33.3	0	0
Feeling isolated or alone after the injury	66.7	33.3	0	0
Dealing with stress related to the injury and rehabilitation	33.3	66.7	0	0
Difficulties emotionally letting go of the injury events	66.7	33.3	0	0
Anxiety related to pain	66.7	33.3	0	0
Difficulty emotionally dealing with pain	66.7	33.3	0	0
Dependence of pain killers	66.7	33.3	0	0
Unwillingness to be patient with the recovery/rehabilitation- refusal to take things slow	66.7	33.3	0	0
Denial of the seriousness of the injury or consequences of injury	66.7	33.3	0	0
Inability to motivate self to engage in rehabilitation tasks	66.7	33.3	0	0
Concerns that the consequences of the injury will disappoint others	66.7	33.3	0	0

Appendix S

Perceptions of frequency of massage therapists' use of psychological skills

	Never %	Rarely %	Sometimes %	Often %
Setting short term goals	66.7	0	0	33.3
Setting long term goals	66.7	0	33.3	0
Imagery	66.7	33.3	0	0
Positive self-talk	66.7	0	0	33.3
Social support with other injured athletes	66.7	0	0	33.3
Relaxation skills	100	0	0	0

Appendix T

Perception of frequency of chiropractor addressing psychological aspect of injury (n=2)

	Never %	Rarely %	Sometimes %	Often %
Fears about surgery	100	0	0	0
Fears of re-injury	0	50	0	50
Avoidance of sport-specific rehabilitation activity	0	0	50	50
Concerns and self-doubt about not being able to perform at the same level after the injury/surgery	0	50	50	0
Emotions (anger, sadness, loss of identity) associated with the injury	50	0	50	0
Emotions about potential long-term effects of injury, re-injury, continued participation in sport	0	50	50	0
Depression associated with injury	50	50	0	0
Frustration associated with injury	0	50	0	50
Concerns about weight loss or gain following the injury	100	0	0	0
Feeling isolated or alone after the injury	100	0	0	0
Dealing with stress related to the injury and rehabilitation	0	100	0	0
Difficulties emotionally letting go of the injury events	100	0	0	0
Anxiety related to pain	50	0	50	0
Difficulty emotionally dealing with pain	100	0	0	0
Dependence of pain killers	100	0	0	0
Unwillingness to be patient with the recovery/rehabilitation- refusal to take things slow	50	50	0	0
Denial of the seriousness of the injury or consequences of injury	50	50	0	0
Inability to motivate self to engage in rehabilitation tasks	100	0	0	0
Concerns that the consequences of the injury will disappoint others	50	0	50	0

Appendix U

Perception of frequency of chiropractors using psychological skills (n=2)

	Never %	Rarely %	Sometimes %	Often %
Setting short term goals	0	50	0	50
Setting long term goals	50	0	0	50
Imagery	50	50	0	0
Positive self-talk	50	50	0	0
Social support with other injured athletes	100	0	0	0
Relaxation skills	100	0	0	0

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